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Rural Diversification

1981 - 1996

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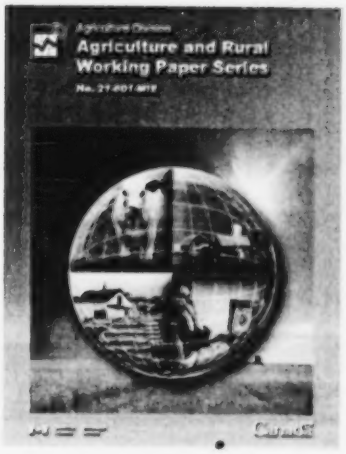

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Rural Diversification

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Executive summary

This research project provides an overview of diversification and specialization in rural regions (census divisions) and communities (census consolidated sub-divisions) for the census years 1981, 1986, 1991 and 1996. Diversified communities tend to be more resilient to economic shocks and are more likely to achieve greater growth in population. Diversification and specialization are measured using a modified Herfindahl Index. A negative change in the HI indicates a shift to a more diversified industrial structure and a positive change reflects more specialization. The HI shows shifts in employment among 18 industrial sectors, thus reflecting shifts in employment from primary industry to manufacturing or other sectors.

A wide range of diversification was found in the census divisions (CDs), but this range remained stable from 1981 to 1996. Within each census division, there was also a wide range in the diversification of the census consolidated sub-divisions (CCSs).

The range and variability of diversification in rural CCSs tends to be greater than that of larger centres. However, if a community is considered diversified if its Herfindahl Index lies between 0.1 and 0.19, then about 70% of rural CCSs are diversified. The number of diversified rural communities increased by 11% between 1986 and 1996. A high degree of variability was found among the provinces. However, Manitoba, Saskatchewan and Alberta had the highest share of the "least diversified" CCSs, and the greatest growth in the number of diversified rural communities was found in these three provinces. Overall, about 41% of rural CCSs experienced labour force growth, while their industrial make-up became more diversified, and 23% experienced growth while specializing. The labour force contracted in the remaining 36% of CCSs. The size of the rural labour force decreased in Newfoundland and Labrador, Manitoba and Saskatchewan, and increased in the other provinces.

The size of the labour force increased in more than half of the agriculture-dominated rural CCSs (employment in agriculture 20% or more) between 1986 and 1996. Of these, 39% became more diversified, and 13% more specialized. The labour force in the agriculture-dominated CCSs decreased in Manitoba and Saskatchewan. Thirty-eight percent of the fishing dominated CCSs experienced labour force growth while becoming more diversified, and 15% grew while specializing. In the logging and forestry-dominated CCSs, there was labour force expansion and diversification in 26% and labour force expansion and specialization in 18% of CCSs. Finally, in the mining-dominated CCSs, 41% had labour force growth while diversifying, and 18% had growth while specializing.

In order to grow, each community must go beyond dependence on the area immediately around it – it must develop a life of its own. Otherwise, its potential is limited. Each community must find its own niche within the global economy. A typical small

community is a microcosm of a larger centre. Employment is distributed between some primary industry, manufacturing, services, distribution and construction. For the small communities that are already diversified, the goal must be to specialize in some new product or products to kick-start the economy. For those that are highly specialized, industrial diversification may be the answer.

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1.0 Introduction

Industrial diversification may be one solution to the economic problems facing rural areas and small towns – particularly those heavily dependent on natural resource extraction [Fletcher *et al* 1991, Clemenson 1992]. A community that is moving to a higher level of specialization may be increasing efficiency and earning satisfactory profits, but may be more vulnerable to the fluctuations in demand and supply in the dominant industry (or industries). For example, a decrease in demand compounded by a decline in the price of the products may result in lay-offs or plant closures [Williamson *et al* 1999]. A diversified economy may be better placed to achieve future growth.

Are rural communities and regions becoming more diversified? What is the range of diversification/specialization across rural communities in Canada? How many rural communities are becoming more diversified and where are these communities located? Are single sector communities such as logging towns becoming more diversified? What is the role of the service sector in diversification? Do faster growing communities tend to be diversifying? The purpose of this study is to document the level and distribution of community diversification in Canada, the number and characteristics of communities that are diversifying and specializing over time, and the characteristics of communities whose economic bases are dominated by primary industry – agriculture, logging and forestry, mining and fishing. The role of the service sector is also analyzed. The characteristics of the faster growing communities are examined in relation to diversification and specialization.

A review of selected articles pertaining to this subject is presented in Chapter 2, followed by data sources and methodology in Chapter 3. Chapter 4 includes the analysis of the range and level of diversification or specialization across regions, defined as census divisions (CDs), and Chapter 5 gives an in-depth analysis of communities, defined as census consolidated sub-divisions (CCSs). Finally we present a summary and conclusions in Chapter 6.

2.0 Background

In this section, we define the terms, 'diversification' and 'specialization,' and review the results of similar studies on rural diversification.

2.1 Definitions

What is diversification? Clemenson [1992] defined diversification an increase in employment in a community through the introduction of new industry or through the expansion of an existing industry other than a single sector or dominant industry. Specialization was defined as the expansion of a dominant industry. In this project, diversification is defined as a shift in employment among 18 industrial sectors as reflected in a negative change in Herfindahl Index, as specified in Chapter 3 following. Specialization is defined as a positive change in the Herfindahl Index reflecting an increase in employment in an already dominant industry.

Why diversify? Diversification reduces the risk of having all of one's eggs in the same basket. Diversification (whether of one's personal portfolio, of a firm's product lines, or of a community's economic base) is "in essence an investment decision." Every investment requires the financial capital to invest and a satisfactory rate of return. Firms exist not to employ workers but to produce a product or service at a satisfactory rate of profit. An increase in demand for the product does not automatically result in an increase in quantity supplied. The increase in demand must be followed by an investment decision to increase output, i.e. a producer response [Caves 1975]. On the other hand, diversification into several weak sectors of the economy may be less desirable than continuously investing in one strong sector [White *et al* 1986].

Isn't specialization desirable? The specialization of labour has been touted as a cause for economic growth since Adam Smith and the *Wealth of Nations*. Specialization means doing one thing, and doing it well – leading to more efficiency and the economical use of resources. Smith's theories led to Ricardo's concept of comparative advantage. Comparative advantage refers to the tendency of a country or region to produce (or specialize in) the product or products that it can produce at relative least cost. Trade may lead to more specialization. Specialization may, however, increase a community's vulnerability to economic shocks (such as lower prices and reduced demand) that can effect the dominant industry. "If the economic base is threatened . . . the future of the entire community can be at risk" [Clemenson 1992].

How does diversification occur? Export-led growth theory suggests that economic growth will accelerate through diversification around the export base as new firms are established to provide inputs to the export sector (backward linkages) or to process the output of the export sector (forward linkages). Further growth comes from the addition of other exportable products and a service sector catering to the needs of the growing work force. Over-dependence on one sector may however lead to stagnation - what Watkins called the 'staple[1] trap' [Watkins 1963].

2.2 Results of previous research

Much of the work published to date on rural diversification focussed on single industry settlements, which are particularly vulnerable to economic shocks. Clemenson [1992] studied mining, fishing and forest dependent communities – identified as those in which 30% or more of their labour force is in a single standard industrial classification (SIC). Labour force dependency on the primary sector increased between 1981 and 1986 in 25 of the 38 fishing dependent communities. In the declining mining sector, 10 of 54 communities were potentially more diversified in the sense that dependence on mining fell below 30%, and they experienced an increase in overall employment. Some wood-based communities have suffered and others have benefited from the rationalization and capitalization in the forest industry. In 26 of the 80 wood-based communities, the labour

[1] Staples are basic commodities such as wheat, lumber and fish, which were important exports in Canada's early history.

force increased and employment in forestry dropped to less than 30% of their labour force, possibly indicating diversification.

Fletcher *et al* [1991] studied the forest dependent communities (census sub-divisions) of the three Prairie Provinces for census years 1981 and 1986. Forest dependent communities were identified using modified location quotients that ranked the communities according to the share of forest employment in total economic base employment. (A location quotient is the ratio of a given jurisdiction's share of employment in industry *i* to a benchmark region's (i.e. the province's) share of employment in the same industry [Korber *et al* 1998].) The sector which forms the economic base is defined as the industry (or industries) that brings income into a community (i.e. exports). A general equilibrium model was used to simulate first a change in output price and then a change in the supply of available timber to measure the welfare impact on the communities. It was found that the more diversified communities were more resilient to economic shocks. The model was subsequently modified further by White and Watson [forthcoming] who proposed a method of identifying single industry towns using a system that weights the location quotients by average annual incomes. The purpose of White and Watson's modification to the calculation of the economic base was to allow the location quotients to reflect different levels of incomes in the communities.

Baldwin and Brown [2001] used a mathematical approach to examine the relationship between employment volatility in manufacturing[2] and diversification. The variance in growth rates was calculated to measure volatility. Diversification is measured using the Herfindahl Index of employment concentration across industries for each census division. 'Rural' is defined as geographic areas outside CMA/CAs[3] with 50,000 or more inhabitants.[4] As regions integrate into the world economy, the degree of specialization is predicted to increase (according to the theory of comparative advantage). Export intensity is defined as the proportion of the value of manufactured goods that are exported.[5] It was found that export intensities of manufactured goods in rural and urban areas have converged, but urban centres have become less specialized between 1979 and 1996. Rural economies, however, are found to have remained more specialized than urban economies. In measuring volatility it was found that the variance of census division employment growth in manufacturing was much higher in rural areas, (especially metro non-adjacent areas) than in urban centres. The model shows that in small towns of less than 1,000 workers attached to manufacturing, increasing diversity and export intensity increased volatility. It was also found that there is a strong statistical relationship between the Herfindahl Index of employment concentration within a specific manufacturing sector, export intensity and the level of employment in manufacturing.

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[2] Total Canadian labour force in manufacturing fell from 2,195,665 in 1981 to 2,039,780 in 1996, but in rural areas (population size less than 10,000) increased from 364,870 to 383,005 in the same time period [Statistics Canada, Census of Population – 1981 and 1996].

[3] CMAs are census metropolitan areas with populations greater than 100,000, and CAs are census agglomerations with populations between 10,000 and 99,999 [Statistics Canada 1999].

[4] Note that in this paper, rural is defined as CCSs with less than 10,000 inhabitants.

[5] Thus exports of unprocessed products such as wheat, potatoes, live animals, lobsters, coal and logs are not included. Exports intensities for rural regions are therefore understated.

Those regions that are more export intensive are more specialized and more volatile. Regions that were specialized at the beginning of the period tended to be less so in the second period and *vice versa*.

In his statistical overview of peripheral regions, Shearmur [2001] pointed out that reliance of these regions on primary industry has remained unchanged over the past 25 years in the midst of absolute stagnation and decline. Peripheral regions are defined as areas outside the CMA/CAs, having less than 10,000 inhabitants, and located beyond an hour's drive (100 to 150 km) from a metropolitan area. It was found that between 1981 and 1996 rural areas (both central and peripheral) have the initial sectoral structure least conducive to growth.

> "A theme which runs through this report is the inertia observed with regards to the spatial distribution of most economic sectors. . . . This means that areas will tend to grow and decline as the sectors which are located there grow and decline; only in rare circumstances – at least on the basis of our analysis – will an area grow because it has been able to significantly modify its economic base" [Shearmur 2001a].

Shearmur [2001b] in his presentation at the PRI conference said that "regional development is no longer an issue; most of these [peripheral] regions are losing jobs and population. [T]he real issue is managing decline."

Earlier research at Statistics Canada on the factors associated with local economic (employment) growth did not include a measure of community diversification as an internal factor contributing to local economic growth [Bollman 1999]. Subsequent analysis [Beshiri *et al* 1999] showed that the level of community diversification in the beginning period was important determinant of later growth.

The problems of growth and diversification in Saskatchewan communities are summarized as follows.

> "The factors which determine that one community grows while others decline are many, complex, and often interrelated. Proximity to other centres, distance from provincial borders, strategic location on transportation routes, and other naturally occurring attributes all play a part in explaining any community's probability of success. In addition, however, the community's economic base, the impact of technological change, increases in incomes and changes in shopping preferences of the resident population are of major importance in determining the fortunes of Saskatchewan's communities. Communities in areas of the province where the economic base is relatively diversified have historically had a better chance of survival and growth than communities that serve primarily as a grain economy. The presence of viable communities in turn contributes to the viability

of the agricultural sector in the surrounding area by providing a source of off-farm employment income" [Stabler *et al* 1992].

The literature suggests that diversification of the industrial base is one factor that has the potential to reduce economic vulnerability and to promote economic growth in rural communities. For small rural areas, however, changing the industrial structure to a more diversified economic base may be difficult.

This project differs from previous work in that the time period is expanded to include census years 1981, 1986, 1991 and 1996, and the geographic unit is the census consolidated sub-division rather than the census sub-division. (See du Plessis *et al* 2002.) The method employed is the Herfindahl Index rather than location quotients or other mathematical measures, and the industrial sectors are aggregated to reflect shifts in employment from primary to manufacturing or other industrial sectors. This study encompasses CCSs where any of the four primary industries – agriculture, logging and forestry, fishing and mining – may be dominant. The following section explains these differences in detail.

3. 0 Methodology, data sources and definitions

In this section, the methodology used to define diversification and specialization, the data sources, the geographic definitions and the industrial classifications for the study are presented.

3.1 Methodology

To create an index that will show the shifts in employment between industries, the Herfindahl Index of industrial concentration[6] is modified such that it equals the sum of the squared employment shares of each industry in each community:

$$HI_{ij} = \sum_{i=1}^{n} S_{ij}^{2}$$

where S is the proportion of employment in industry$_i$ in community$_j$. It varies from 1/N, when all industries have the same share, to 1, when one large industry (or firm) accounts for all employment. If the Herfindahl Index decreases, the region is said to be diversifying.[7]

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[6] The Herfindahl Index has been primarily used to measure industrial concentration by the relative share of sales by a particular firm in a particular industry.

[7] An alternative method would be to construct an "index of dissimilarity" [Kusmin, *et al.* 1996; Cunningham and Bollman 1997] that compares the distribution of employment by industry within a community to the distribution of employment at the national level. If the community moves towards the national distribution, the community is said to be diversifying (in the sense that it is becoming 'more similar' to the national picture). The index ranges from –200 to zero. An index close to zero would indicate an area close to the national distribution of employment. The national trend, however, is for manufacturing employment to decrease between 1981 and 1996. Therefore, the addition of a manufacturing plant in a small CCS would cause the dissimilarity index to decrease, indicating less diversification. Other researchers [Fletcher *et al* 1991] use the location quotient method.

During an economic downturn, the HI could decrease, indicating more diversification, because the dominant sector is shedding labour. Alternatively, the HI could increase, indicating more specialization, because the leading sector has retained its labour force, but other industries have shed workers. In addition, a high level of diversification in a small centre might indicate a lack of focus.

Since the calculation is based on employment shares, job losses resulting from technological advances may show up as diversification (*ceteris paribus*), but shipments of the commodity may be increasing due to technological change.

3.2 Data sources

The experienced labour force by industry was extracted from Statistics Canada, Census of Population for 1981, 1986, 1991 and 1996, adjusted to 1996 census boundaries. The experienced labour force consists of the population 15 years old and over, excluding institutional residents, who worked for pay or in self-employment during the Census year or the previous year. "The experienced workforce can be derived by excluding from the total labour force those unemployed persons 15 years of age and over who have never worked or who had last worked prior to January 1, 1995 only" (for the 1996 Census) [Statistics Canada 1999].

The numbers are randomly rounded in multiples of five by Statistics Canada to protect confidentiality sources. Another limitation of using this data is that the experienced labour force variable does not differentiate whether the jobs are full-time, part-time or casual, or whether the jobs are high or low-paying. In addition, this method does not address changes in productivity. A firm may be shedding labour because of improvements in technology, not because of industry contraction. Also, it is implicitly assumed that workers live and work in the same census consolidated sub-division. (Although the Census of Population does ask for the place of work, it was not considered in this analysis.)

3.3 Geographic definitions

In this paper, diversification is evaluated by census division (CD) and by census consolidated sub-division (CCS). Note that these CDs and CCSs are identified using 1996 boundaries. (For more information, see du Plessis *et al* 2002.)

CDs are areas established by provincial law that are intermediate geographic areas between the municipal (census sub-division) and the provincial level. Census divisions represent counties, regional districts, regional municipalities and other types of provincially legislated areas [Statistics Canada 1999].

For census divisions, 'rural' is defined according to OECD[8] definitions. Rural communities are the areas in which the population per square kilometre is less than 150 inhabitants per square kilometre. 'Predominantly rural' regions are those in which more

[8] Organization for Economic Co-operation and Development

than 50% of the population lives in a rural community; 'intermediate regions' – between 15% and 50% of the population lives in a rural community, and 'predominantly urban' regions where less than 15% of the population lives in a rural community. Statistics Canada further categorizes the predominantly rural regions into 'metropolitan adjacent' regions, 'non-metropolitan adjacent' regions, and 'northern regions.' Please note that these codes were developed for the 1996 data, and applied to the data for the other three census years [du Plessis *et al* 2002].

Table 1 – Seventy-eight percent of census divisions are rural

(1996 census boundaries)

OECD code*	# of CDs	%	1	2	3	4	5
Newfoundland & Labrador	10	3.5	0	7	2	1	0
Prince Edward Island	3	1.0	1	2	0	0	0
Nova Scotia	18	6.3	6	11	0	1	0
New Brunswick	15	5.2	6	7	0	1	1
Quebec	99	34.4	28	37	3	19	12
Ontario	49	17.0	17	10	2	13	7
Manitoba	23	8.0	8	11	3	0	1
Saskatchewan	18	6.3	6	9	1	2	0
Alberta	19	6.6	9	7	1	0	2
British Columbia	28	9.7	5	16	5	0	2
Yukon	1	0.3	0	0	1	0	0
Northwest Territories	5	1.7	0	0	5	0	0
CANADA	288	100.0	86	117	23	37	25
Percent of total			29.9	40.6	8.0	12.8	8.7

*OECD code: 1- Rural, metro adjacent, 2 - Rural, non-metro adjacent, 3 - Northern hinterlands, 4 - Intermediate, 5 - Predominantly urban [du Plessis *et al* 2002]

Source: Statistics Canada 1999.

Of the 288 CDs in Canada, 226 (78%) are classified as rural according to OECD definitions (Table 1). Thirty-eight percent of these are metropolitan adjacent, 52% non-metropolitan adjacent, and 10% northern hinterlands CDs. Thirty-four percent of all census divisions are in Quebec, two-thirds of which are rural. According to this definition, all of Prince Edward Island's CDs are rural. All but one of Newfoundland and Labrador's, Nova Scotia's, and Manitoba's CDs are considered rural. Two of Saskatchewan's CDs are considered intermediate regions (Saskatoon and Regina). Two of Alberta's and two of British Columbia's CDs are not classified as rural.

A CCS is a grouping of census sub-divisions, which are municipalities (as defined by provincial legislation) or their equivalents (cities, townships, Indian reserves, Indian settlements and unorganized territories). Generally, the smaller, more urban census sub-divisions (towns, villages, etc.) are combined with the surrounding, larger, more rural census sub-division in order to create a geographic level between the census sub-division and the census division [Ibid.].

In the 1996 Census of Population, there were 2,607 CCSs. After those with populations of less than 40 residents in any census year are eliminated, 2,512 CCSs remain; of these 2,145 (85%) are classified as rural in this paper (Table 2). 'Rural' is defined as the census consolidated sub-divisions with populations of more than 40 and less than 10,000 inhabitants in 1981.[9] The CCSs whose populations had fallen below 40 by 1996 are also excluded. Some CCSs in this size classification may be located within urban areas. Indian reserves fitting the above criteria were included in the analysis.

Table 2 - Forty-six percent of the rural* CCSs are in Quebec**

Province	Total rural*	%
CANADA	2,145	
Quebec	977	45.5
Ontario	384	17.9
Saskatchewan	291	13.6
New Brunswick	133	6.2
Manitoba	113	5.3
Newfoundland and Labrador	79	3.7
Prince Edward Island	66	3.1
Alberta	38	1.8
British Columbia	31	1.4
Nova Scotia	29	1.4
Northwest Territories***	4	0.2
Yukon[10]	0	

*Rural - CCSs >40 and < 10,000 inhabitants
**CCS – Census Consolidated Sub-division
***Northwest Territories includes Nunavut.

Source: Statistics Canada 1999. Statistics Canada, 1996 Census of Population

As a large proportion of the rural CDs and CCSs are located in Quebec, analysis at the national level is heavily weighted by the situation in that province (Tables 1 and 2).

3.4 Classification of industrial sectors

In this project, diversification is defined as a shift in employment among 18 industrial sectors as reflected in a negative change in Herfindahl Index, as specified above. Specialization is defined as a positive change in the Herfindahl Index, reflecting an increase in employment in an already dominant industry. To define industries and reflect industrial diversification, the Standard Industrial Classification SIC1970 for 1981, and SIC1980 for 1986, 1991 and 1996 were used to aggregate employment of the experienced labour force into 18 industries. This aggregation is designed to show shifts in

[9] Thus two definitions of 'rural' are used in this paper – 1) the OECD definitions for census divisions and 2) for CCSs, all CCSs with populations of more than 40 and less than 10,000 inhabitants.

[10] The Yukon Territory is considered to be one CCS that includes Whitehorse, the population of which is more than 10,000.

employment from the primary sector to other sectors, including related sectors. For example, a shift in employment from agriculture to traditional agricultural manufacturing (e.g. food processing) will be reflected in the index. Also, the manufacturing sectors are sub-divided to show manufacturing related to the four primary sectors (e.g. agriculture, traditional agricultural manufacturing – food processing, and complex agricultural manufacturing – agricultural machinery and parts). The energy sector is included with the general category of mining. Note that services incidental to the primary sectors are included with producer services.

The Herfindahl Index measures shifts in employment among the following 18 industries.

Primary Industry – excluding incidental services

1. Agricultural and related industries
2. Fishing and trapping
3. Logging and forestry
4. Mining, quarrying and oil wells

Traditional Manufacturing

5. Agricultural manufacturing
6. Fishing manufacturing
7. Forestry manufacturing
8. Mining manufacturing
9. Other manufacturing

Complex Manufacturing

10. Agriculture manufacturing
11. Printing
12. Metals manufacturing
13. Non-metals manufacturing
14. Construction

15. Distributive Services

Transportation and storage
Communication and other utilities
Wholesale trade industries
Retail trade industries

16. Producer Services

Finance and insurance industries
Real estate operator and insurance agent industries
Business service industries
Service industries incidental to:

Agriculture
Forestry
Mineral Extraction

17. Personal Services

Accommodation, food and beverage service industries
Other service industries (includes amusement, recreation, personal services, employee associations, leasing services, travel services, and the like.

18. Social Services

Government service industries
Educational service industries
Health and social service industries

For this study, rural CCSs were selected as those with populations of less than 10,000 in 1981, and more than 40 in any of the four census years. These 2,145 CCSs were analyzed throughout the paper (i.e. the number of rural CCSs remains constant for all the analysis).

The experienced labour force in the 2,145 rural CCSs increased from 2.1 million in 1981 to 2.6 million in 1996, an increase of 25% (Table 3). Employment decreased in agricultural related industries, in fishing related industries, and in forestry related industries. While mining employment has decreased, employment in mining manufacturing increased. The labour force engaged in services, particularly producer services, has increased markedly. (The shares of the rural labour force by industrial sector are presented in pie chart form for 1981 and 1996 in Appendix A and Appendix B, respectively.)

Table 3 – Sectoral changes in the rural labour force*						
					% Change	% Change
	1981	1986	1991	1996	1981-96	1986-96
Agriculture-related industry						
Agriculture	293,445	304,155	296,200	264,260	-9.9	-13.1
Traditional agricultural MFG**	58,585	57,845	56,800	57,050	-2.6	-1.4
Complex agricultural MFG	4,945	4,220	4,195	6,125	23.9	45.1
Total agriculture	356,975	366,220	357,195	327,435	-8.3	-10.6
Fishing & trapping-related industry						
Fishing & trapping	21,340	26,535	26,270	24,575	15.2	-7.4
Traditional fishing MFG	36,760	38,550	36,595	24,320	-33.8	-36.9
Total fishing	58,100	65,085	62,865	48,895	-15.8	-24.9
Logging & forestry-related industry						
Logging & forestry	38,525	37,655	31,925	31,585	-18.0	-16.1
Traditional forestry MFG	81,090	76,040	71,620	80,560	-0.7	5.9
Printing	13,250	14,825	17,425	19,860	49.9	34.0
Total forestry	132,865	128,520	120,970	132,005	-0.6	2.7
Mining-related industry						
Mining and oil wells	37,640	29,930	29,675	26,420	-29.8	-11.7
Traditional mining MFG	9,165	8,095	8,450	11,445	24.9	41.4
Complex metals MFG	83,215	99,925	104,240	119,610	43.7	19.7
Complex non-metals MFG	25,995	25,895	27,130	25,255	-2.8	-2.5
Total mining	156,015	163,845	169,495	182,730	17.1	11.5
Other						
Other traditional MFG	51,865	45,040	41,050	38,780	-25.2	-13.9
Construction & distribution						
Construction	154,075	154,750	186,830	175,350	13.8	13.3
Distribution	448,845	490,480	560,815	598,935	33.4	22.1
Total construction & distribution	602,920	645,230	747,645	774,285	28.4	20.0
Services						
Producer services	118,310	140,035	180,755	207,700	75.6	48.3
Personal services	202,450	247,160	282,455	329,595	62.8	33.4
Social services	399,440	448,220	539,520	550,315	37.8	22.8
Total services	720,200	835,415	1,002,730	1,087,610	51.0	30.2
Rural labour force	2,078,940	2,249,350	2,501,950	2,591,740	24.7	15.2

*Rural is defined as CCSs with populations of more than 40 and less than 10,000 inhabitants in the 1981 census; labour force includes experienced labour force.
**MFG - manufacturing
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

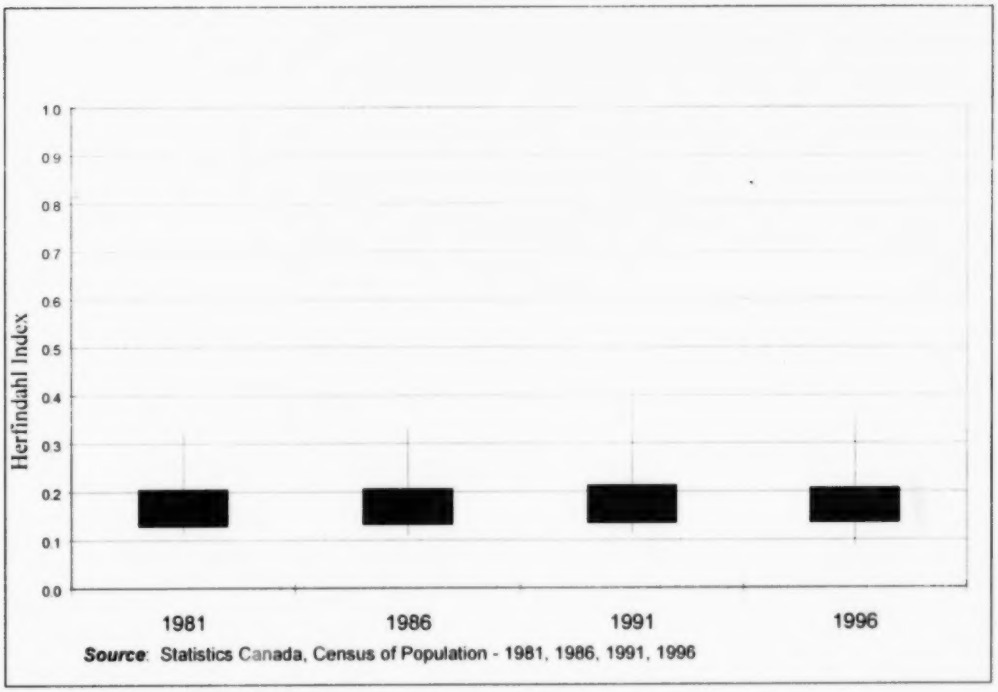
4.0 Diversification and specialization at the regional (CD) level

In this section, we analyze diversification and specialization at the regional level (CDs) using the modified Herfindahl Index.

Box - The 'boxes' in the box charts which follow (e.g. Figure 1) show the mean (average) of the Herfindahl Index as the vertical centre of each box, and the vertical size of a box depicts one standard deviation above and below the mean. The 'whiskers' indicate the maximum and minimum values (the range) of the Herfindahl Index. About two-thirds of the observations lie within the boxes.

The average level of diversification as measured by the Herfindahl Index (See Box.) increased slightly between 1981 and 1991, and then decreased in 1996 (Figure 1). The range of diversification increased during the 1991 recession and decreased during the upswing of 1996. The level of diversification was at its minimum during 1996.

Figure 1 – In CDs, diversification diverged in the 1991 recession and converged during the 1996 upswing



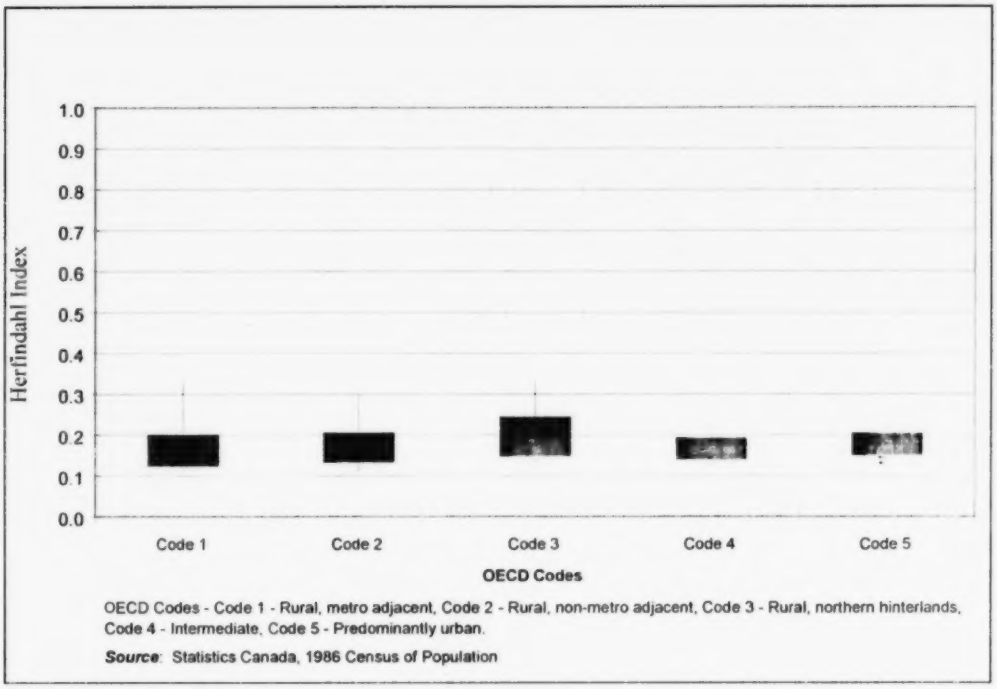
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

When the census divisions are classified according the OECD definitions for rural and urban areas, the pattern shown in Figure 2 is the result. In 1986, intermediate and predominantly urban areas show a higher degree of diversification than rural areas –

average HI is less. Also the range of the Herfindahl Index is smaller in urban areas, and so is the variability about the mean (the vertical size of the box is smaller).

In the rural areas, the range of the HI in rural CDs that are not metro-adjacent is less than the metro-adjacent CDs but the mean is higher, showing slightly more specialization. The northern regions are more specialized than other regions (the mean HI is greater) and the variability is greater.

Figure 2 - The range of diversification in rural CDs is greater than in intermediate or urban CDs - 1986

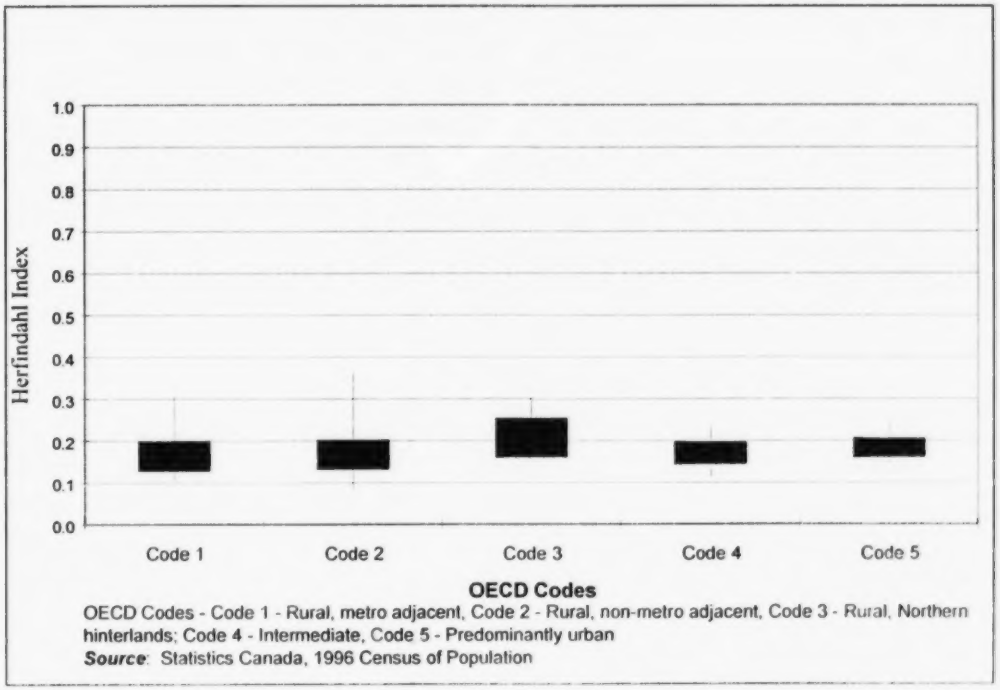


OECD Codes - Code 1 - Rural, metro adjacent, Code 2 - Rural, non-metro adjacent, Code 3 - Rural, northern hinterlands, Code 4 - Intermediate, Code 5 - Predominantly urban.

Source: Statistics Canada, 1986 Census of Population

Figure 3 shows the range of diversification for CDs in 1996. The pattern has remained virtually constant between 1986 and 1996.

Figure 3 - The level of diversification in CDs changed very little between 1986 (Figure 2) and 1996

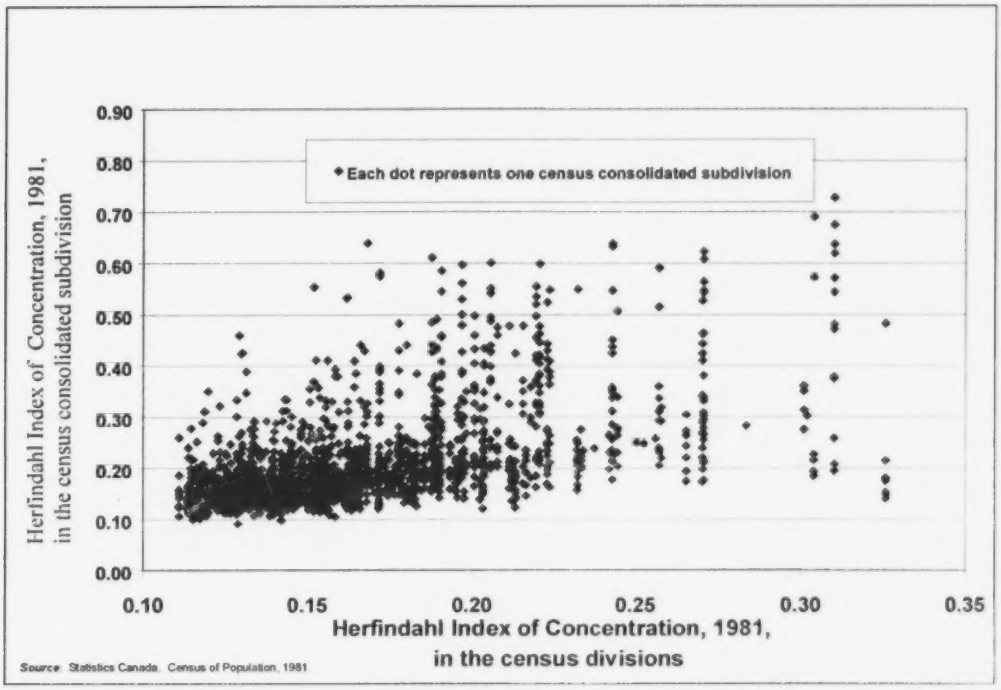


OECD Codes - Code 1 - Rural, metro adjacent, Code 2 - Rural, non-metro adjacent, Code 3 - Rural, Northern hinterlands; Code 4 - Intermediate, Code 5 - Predominantly urban

Source: Statistics Canada, 1996 Census of Population

Figure 4 shows the dispersion of the CDs and the CCSs within them for 1981. There was a wide range of diversification (as specified by the HI) among the CDs, and within each CD there was also a wide range of diversification among the CCSs.

Figure 4 - The dispersion of CCSs within CDs - 1981



Because of the pattern of diversification and specialization in census divisions shows little variability over time (Figures 2 and 3), we turn to an analysis of the census consolidated sub-divisions.

5. 0 Diversification and specialization at the community (CCS) level

In this section, we analyze diversification and specialization at the community level (CCSs) in terms of a comparison with larger centres, the level of diversification and specialization, changes in diversification over time, diversification by industrial sector including the four primary sectors and services, and the characteristics of the CCSs that grew beyond the threshold of 10,000 residents.

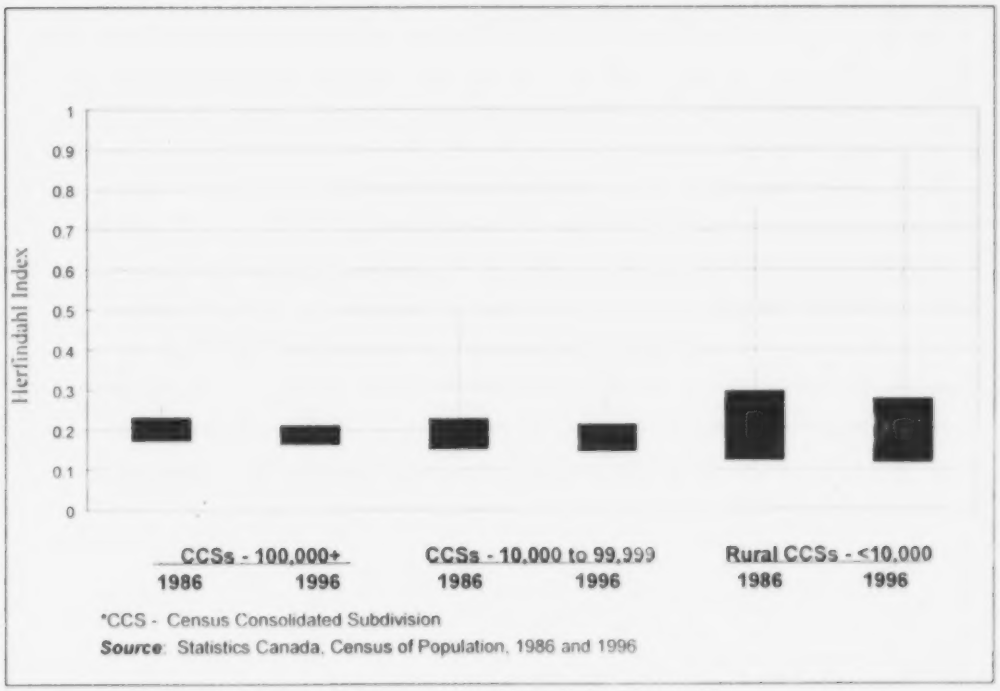
5.1 Rural in the national context

When diversification and specialization are compared at the community (CCS) level in terms of a rural/urban split, the same pattern as in the CDs emerges. The box charts of Figure 5 shows that for all CCSs, regardless of population size, the average level of the Herfindahl Index decreased, inferring an increase in diversification between 1986 and 1996 (see Box.). That is, convergence to a higher level of diversification was apparent for all CCS population sizes. The range and variability of diversification for the CCSs with populations between 10,000 and 99,999 are greater than that of the CCSs with a

population size of more than 100,000 residents, and both the variability and the range decreased during the period. The variability of diversification for the rural CCSs was greater than that of the larger CCSs, and the range increased between 1986 and 1996.

The box charts also show that the level of diversification is highest (the Herfindahl Index is lowest) in some rural CCSs. This suggests that large urban centres are specialized to some degree.

Figure 5 - The range of diversification is greater in rural CCSs* than in larger CCSs



The Herfindahl Index for the CCSs with populations greater than 100,000 ranged between 0.152 and 0.271 in 1986. By 1996, the range for these CCSs was from 0.146 to 0.253. Toronto's HI, for example, was 0.172 in 1986 and 0.186 in 1996, indicating that Toronto's economy was becoming more specialized. Ottawa's HI was 0.259 in 1986 and 0.238 in 1996. Ottawa became more diversified.

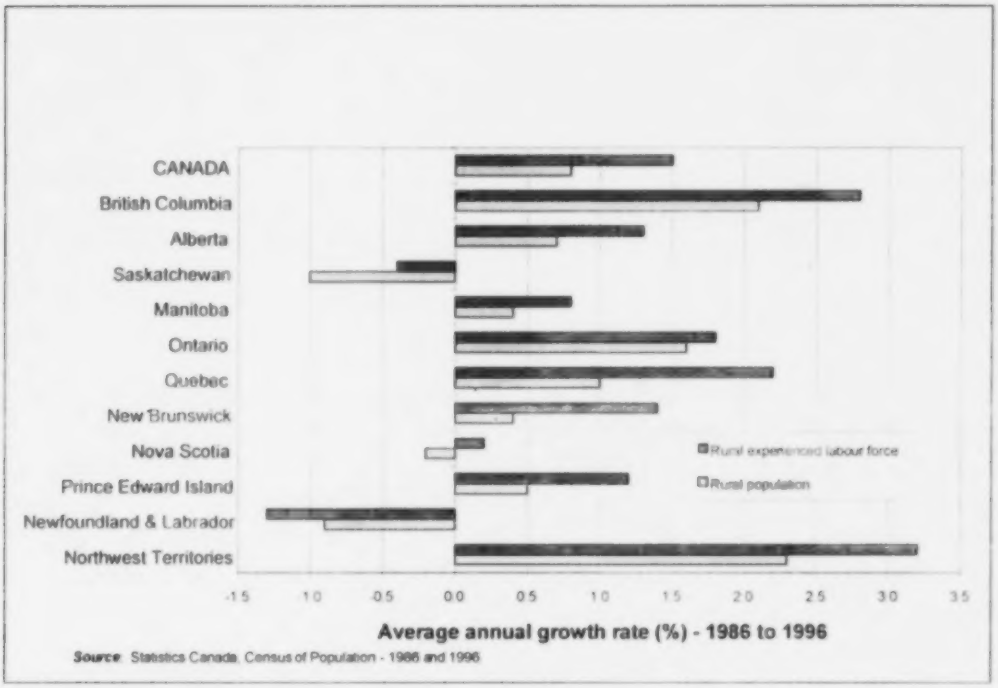
5.2 The rural landscape

The population of the 2,145 rural CCSs[11] in this study grew from 4.9 million in 1986 to 5.4 million in 1996, an average annual growth rate of 0.8%. The experienced labour force increased from 2.2 million in 1986 to 2.6 million in 1996, an average annual growth

[11] The CCSs included in this project and defined as rural are those with more than 40 inhabitants in any of the four census years (1981, 1986, 1991, 1996), and with less than 10,000 inhabitants in 1981.

rate of 1.5%. The rural population declined in Newfoundland and Labrador, Nova Scotia and Saskatchewan. The experienced work force increased faster than the population for all provinces between 1981 and 1996, as the proportion of the population that was in the experienced labour force increased. The proportion in the labour force in Quebec was lower than the Canadian average in all four years, and also lower than that of Ontario and all four Western provinces. The proportion was also low in Newfoundland and Labrador, Nova Scotia and New Brunswick (Table 4). The average annual growth rates in the experienced labour force and population for 1986 to 1996 are given in Figure 6.

Figure 6 - The average annual growth rate of the experienced labour force in the 2,145 rural CCSs exceeded the population growth rate - 1986 to 1996



Source: Statistics Canada, Census of Population - 1986 and 1996

Table 4 - Population and experienced labour force in rural areas (CCSs <10,000)					
	1981	1986	1991	1996	Average annual growth rate 1986 to 1996
Canada					
Total rural population	4,882,985	4,946,465	5,148,260	5,350,765	0.8
Experienced labour force	2,079,185	2,249,165	2,511,000	2,600,805	1.5
Percent of population	42.6	45.5	48.8	48.6	
Newfoundland & Labrador					
Total rural population	305,590	305,320	295,810	279,055	-0.9
Experienced labour force	106,705	118,065	124,870	103,835	-1.3
Percent of population	34.9	38.7	42.2	37.2	
Prince Edward Island					
Total rural population	77,220	79,160	80,860	83,535	0.5
Experienced labour force	34,090	38,675	42,275	43,600	1.2
Percent of population	44.1	48.9	52.3	52.2	
Nova Scotia					
Total rural population	181,735	183,460	182,650	178,945	-0.2
Experienced labour force	71,505	79,330	84,545	80,590	0.2
Percent of population	39.3	43.2	46.3	45.0	
New Brunswick					
Total rural population	321,205	330,225	334,605	344,605	0.4
Experienced labour force	125,765	140,180	154,230	160,700	1.4
Percent of population	39.2	42.4	46.1	46.6	
Quebec					
Total rural population	1,713,000	1,730,720	1,815,130	1,918,145	1.0
Experienced labour force	706,060	745,125	852,200	926,445	2.2
Percent of population	41.2	43.1	46.9	48.3	
Ontario					
Total rural population	1,134,805	1,164,710	1,294,600	1,368,350	1.6
Experienced labour force	521,390	573,230	668,395	685,000	1.8
Percent of population	45.9	49.2	51.6	50.1	
Manitoba					
Total rural population	273,950	274,145	275,110	284,155	0.4
Experienced labour force	121,035	131,725	140,345	143,045	0.8
Percent of population	44.2	48.0	51.0	50.3	
Saskatchewan					
Total rural population	466,785	463,055	430,410	417,825	-1.0
Experienced labour force	203,920	219,625	217,965	211,015	-0.4
Participation rate	43.7	47.4	50.6	50.5	
Alberta					
Total rural population	218,080	222,865	227,240	238,990	0.7
Experienced labour force	104,065	115,225	123,350	130,540	1.3
Percent of population	47.7	51.7	54.3	54.6	
British Columbia					
Total rural population	167,165	165,540	181,640	202,880	2.1
Experienced labour force	76,780	77,830	90,900	102,160	2.8
Percent of population	45.9	47.0	50.0	50.4	

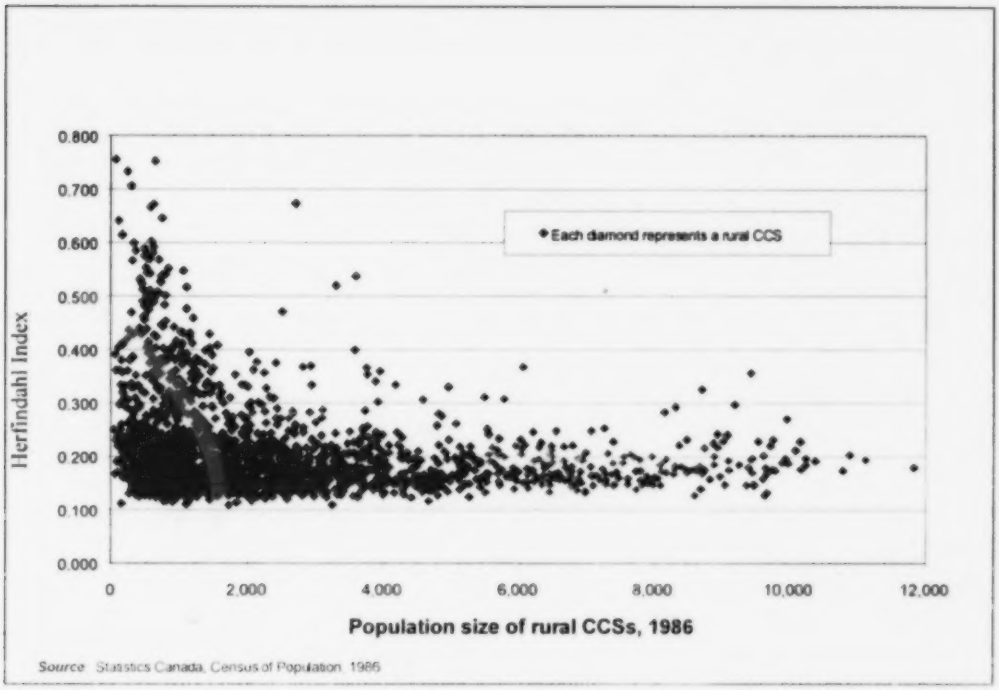
Northwest Territories					
Total rural population	23,325	27,065	30,015	34,070	2.3
Experienced labour force	7,870	10,155	11,925	13,875	3.2
Percent of population	33.7	37.5	39.7	40.7	
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996					

Between 1986 and 1996, the rural experienced labour force increased more than the population in most provinces, the result of the increasing proportion of the rural population in the experienced labour force. However, in Newfoundland and Labrador the experienced labour force decreased more than the population did. In Saskatchewan both experienced labour force and population decreased, and in Nova Scotia the rural population decreased but the experienced labour force grew.

5.3 Level of rural diversification

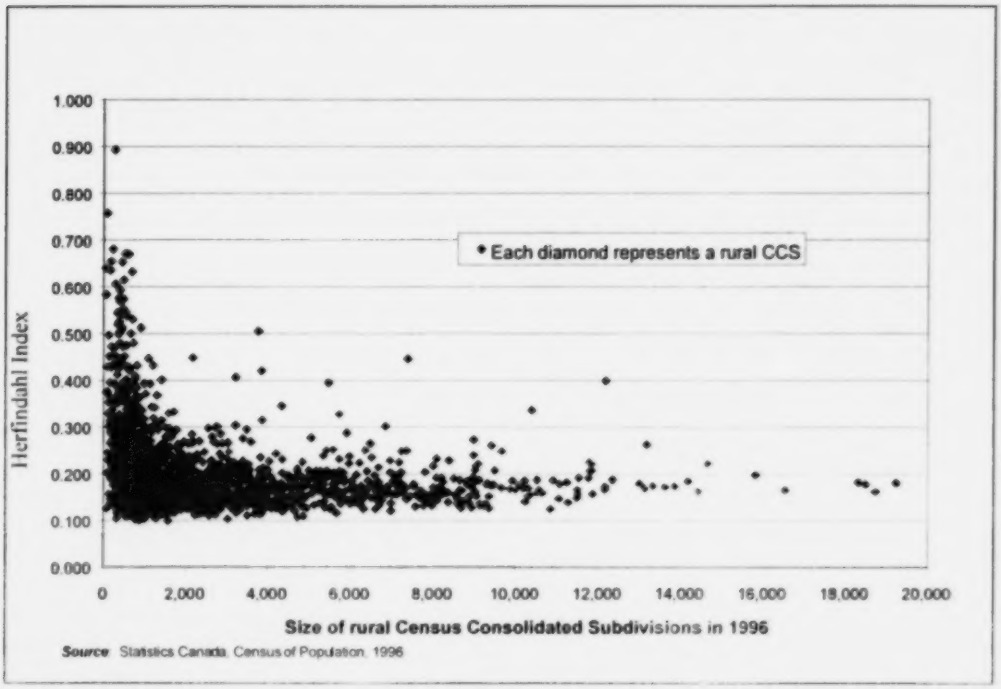
If industrial diversification is one factor determining employment growth and therefore influencing community size, the Herfindahl Index should decrease as the community size increases. (On the other hand, a community could increase in size as it becomes more specialized.) The relationship between the level of diversification in the 2,145 rural CCSs and the size of the communities was tested by plotting these two variables. Figure 7 shows the rural CCSs that had populations of less than 10,000 in 1981. Ten grew such that their populations were more than 10,000 in 1986. The more specialized communities tend to be small in size, and the larger communities tend to be diversified. However, a large number of CCSs with populations of less 4,000 were highly diversified – their HIs were between 0.100 and 0.250.

Figure 7 - Most CCSs had less than 4,000 inhabitants and were highly diversified



By 1996 (Figure 8), 48 of the rural CCSs had populations greater than 10,000, but the same pattern appears. A large number of the CCSs are grouped in the 0.100 to 0.250 range of the Herfindahl Index, but more of the rural CCSs with populations of less than 1,000 are grouped in higher levels of the Index.

Figure 8 - More small rural CCSs were specialized in 1996 than in 1986



The line between which CCSs are diversified and which are specialized is unclear. Suppose we consider any CCS with an HI between 0.1 and 0.2 to be diversified. Table 5[12] shows that the number of diversified CCSs has increased between 1981 and 1996 and that, in general, larger centres tend to be more diversified than smaller ones.

Table 5 - Larger CCSs tend to be more diversified

	Percent of CCSs with HI between 0.10 and 0.19			
Population Size*	**1981**	**1986**	**1991**	**1996**
< 500**	51.8	47.8	50.4	42.0
500 to 2,499**	64.2	61.2	67.4	70.3
2,500 to 4,999**	77.3	74.1	81.8	83.8
5,000 to 9,999**	79.2	76.4	85.3	82.9
10,000 to 49,999	85.0	73.4	83.3	84.7
50,000 to 99,999	72.1	59.1	83.7	87.3
>100,000	82.4	67.6	76.2	73.5
Percent of total	69.4	64.9	72.0	72.5
*By year, **Rural				
Source: Statistics Canada, Census of Population, 1981, 1986, 1991, 1996				

[12] See Appendices C, D, E, F for more information on the range of diversification by CCS size, and Appendices G, H, I, J and K for the range of diversification by OECD code.

Table 5 also shows that a smaller proportion of CCSs with less than 500 inhabitants are diversified than any other size category. Those with more than 500 but less than 2,500 inhabitants also tend to be less diversified than larger centres, but the proportion that are diversified increased to 70% in 1996.

When the rural component was isolated, it was found that in 1986, 1,368 rural CCSs – about 65% of those in this study – were diversified. By 1996, this total had increased to 1,515 CCSs. Seventy-one percent of the rural CCSs were diversified in 1996 (Table 6 and Figure 9). Figure 10 shows the percentage of rural CCSs that were diversified in 1986 and 1996, with the provinces sorted by the largest percentage in 1996.

Nova Scotia, New Brunswick and Prince Edward Island had a large proportion of their rural CCSs in the diversified category than other provinces. The provinces having the smallest percentage of diversified rural CCSs were Alberta, Saskatchewan and Manitoba. The largest increase in the number of diversified CCSs between 1986 and 1996, however, occurred in those three provinces. Prince Edward Island was the only province in which the share of CCSs that were diversified decreased between 1986 and 1996. British Columbia showed no change.

Table 6 - The number of diversified* rural* CCSs increased by 11% between 1986 and 1996

Province	1986	% of total*	1996	% of total*	% change
CANADA	1,368	63.8	1,515	70.6	10.7
Nova Scotia	25	86.2	27	93.1	8.0
New Brunswick	108	81.2	116	87.2	7.4
British Columbia	27	87.1	27	87.1	0.0
Prince Edward Island	56	84.8	55	83.3	-1.8
Ontario	280	72.9	314	81.8	12.1
Quebec	744	76.2	779	79.7	4.7
Newfoundland & Labrador	53	67.1	58	73.4	9.4
Alberta	10	26.3	20	52.6	100.0
Manitoba	31	27.4	51	45.1	64.5
Saskatchewan	34	11.7	68	23.4	100.0

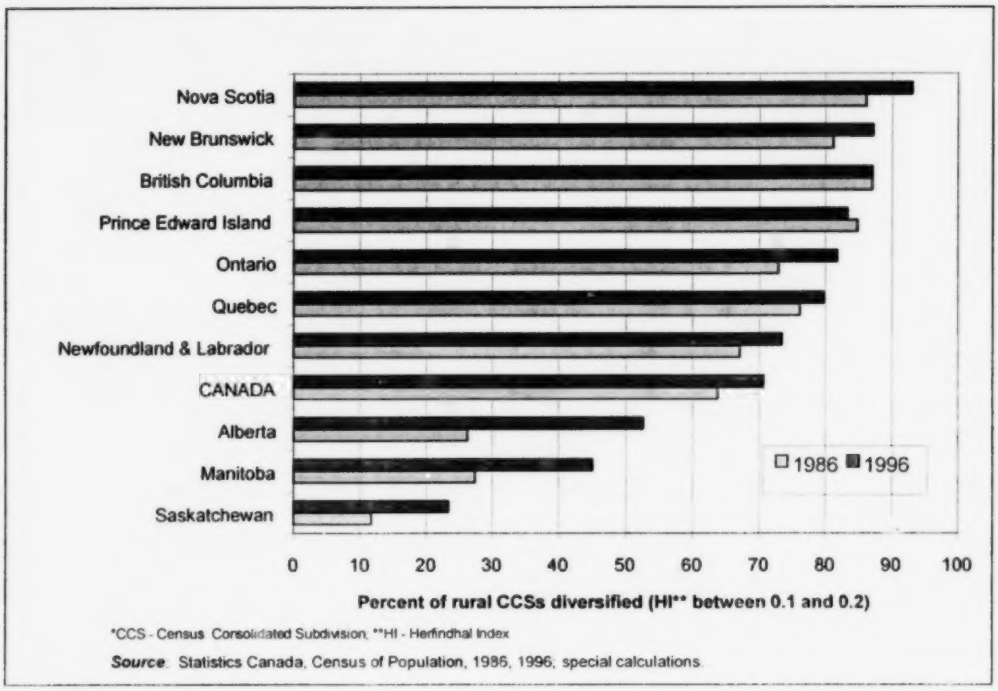
*diversified - Herfindahl Index between 0.1 and 0.2

*rural - CCSs (Census Consolidated Subdivisions) <10,000 inhabitants in 1981

*total – represents % of total provincial rural CCSs

Source: Statistics Canada, Census of Population, 1986 and 1996

Figure 9 - Over 70% of rural CCSs* in Canada were diversified in 1996



CCSs with Herfindahl Indexes of greater than 0.4 are generally highly specialized and as a result vulnerable to economic shocks. In 1986, 98 CCSs fall into that category – 12 in Quebec, one in Ontario, nine in Manitoba, 75 in Saskatchewan and one in Alberta. Of these, 78 (80%) had a population of less than 1,000 inhabitants. The range in population size was from 95 to 3,670 residents.

By 1996, the number of highly specialized CCSs had decreased to 69 – one in Newfoundland and Labrador, 12 in Quebec, 3 in Ontario, 6 in Manitoba, 45 in Saskatchewan and two in Alberta. The population size of these CCSs ranged from 65 to 7,575 inhabitants. Of the 69, 59 (86%) had less than 1,000 inhabitants.

The HI for this group ranged from 0.4 to 0.755 in 1986, and from 0.4 to 0.892 in 1996. Thus the number of highly specialized rural CCSs decreased between 1986 and 1996, but the average population size of the CCSs and the average level of the HI increased.

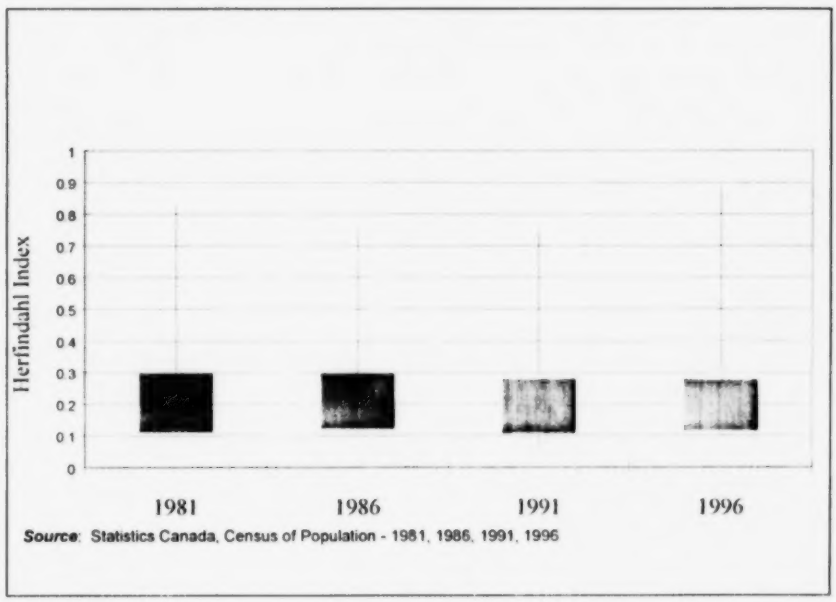
5.4 Changes in diversification and specialization

Data for this study are drawn from the four Census years 1981, 1986, 1991 and 1996. Two of these years, 1981 and 1991, fell during recessions, and two (1986 and 1996) were relative boom years. The impact of a recession on the HI could be positive or negative. The HI could decrease, indicating more diversification, because the leading sector had

shed labour. On the other hand, the HI could increase, indicating more specialization, if the leading sector retained its work force, but other industries shed workers.

The impact of the business cycle on diversification is shown in Figure 10.[13] All 2,145 rural CCSs are included in Figure 10 and all are included in either Figure 11 or 12. For all rural CCSs, the average level of diversification increased slightly in 1986, fell in 1991, and increased again in 1996. The range of the index increased in 1996. Thus on average, the HI increased somewhat (i.e. more specialization, less diversification) in expansionary periods, compared to periods of economic slowdown.

Figure 10 - On average, rural CCSs became more diversified in the 1990s, and the range of diversification/specialization increased in 1996



The magnitude of the changes in the HI between 1986 and 1996 is given in Table 7 for the rural CCSs. In 94% of the rural CCSs the magnitude of the change in the HI was between –0.1 and 1.0. Almost all of the CCSs that were already diversified in 1986 (i.e. their HIs were in the 0.1 to 0.2 range) remained so – only 22 became more specialized, and none became more diversified. The more specialized CCSs tended to become more diversified.

Sixty-nine percent of the CCSs whose HI decreased by 0.2 or more were highly specialized to in 1986 (HI greater than 0.5). In fact all of the CCSs whose HI decreased

[13] The 'boxes' in the box charts show one standard deviation above and below the mean, and the 'whiskers' indicate the maximum and minimum values (the range) of the Herfindahl Index. About two-thirds of the observations lie within the 'boxes.'

by more than 0.2 were specialized in 1986 (HI greater than 0.3). However for the CCSs whose HI decreased by a magnitude of 0.1 to 0.2, the majority of CCSs had an HI in 1986 in the mid-range (between 0.2 and 0.4).

The CCSs that specialized (the HI increased) tended to have been highly diversified in 1986 – the HI was either between 0.1 and 0.19 or between 0.2 and 0.29.

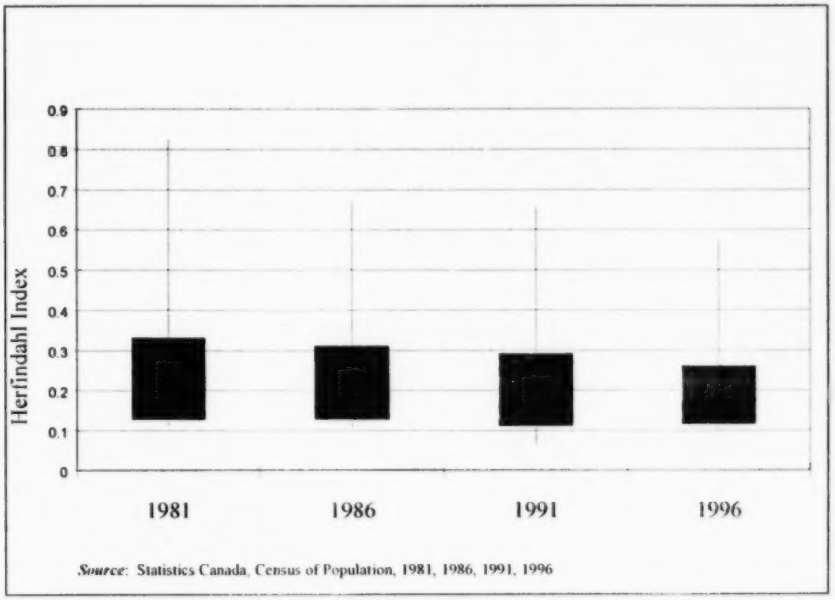
Table 7 - The change in the HI was between -0.1 and 0.1 for most rural CCSs

	Change in Herfindahl Index between 1986 and 1996					
Herfindahl	**Number of CCSs**					
Index - 1986	**< -0.2**	**> -0.2, < -0.1**	**>= -0.1, <=0.1**	**> 0.1, < 0.2**	**>= 0.2**	**Total**
0.1 to 0.19	0	0	1349	20	2	1,371
0.2 to 0.29	0	19	492	11	2	524
0.3 to 0.39	2	35	111	6	1	155
0.4 to 0.49	3	16	29	1	1	50
0.5 and over	11	13	19	2	0	45
Total	16	83	2000	40	6	2,145
Herfindahl	**Percent of CCSs by level of HI in 1986**					
Index - 1986	**< -0.2**	**> -0.2, < -0.1**	**>= -0.1, <=0.1**	**> 0.1, < 0.2**	**>= 0.2**	**Total**
0.1 to 0.19	0.0	0.0	98.4	1.5	0.1	100.0
0.2 to 0.29	0.0	3.6	93.9	2.1	0.4	100.0
0.3 to 0.39	1.3	22.6	71.6	3.9	0.6	100.0
0.4 to 0.49	6.0	32.0	58.0	2.0	2.0	100.0
0.5 and over	24.4	28.9	42.2	4.4	0.0	100.0
Total	0.7	3.9	93.2	1.9	0.3	100.0
Herfindahl	**Percent of CCSs by change in Herfindahl Index - 1986 to 1996**					
Index - 1986	**< -0.2**	**> -0.2, < -0.1**	**>= -0.1, <=0.1**	**> 0.1, < 0.2**	**>= 0.2**	**Total**
0.1 to 0.19	0.0	0.0	67.5	50.0	33.3	63.9
0.2 to 0.29	0.0	22.9	24.6	27.5	33.3	24.5
0.3 to 0.39	12.5	42.2	5.6	15.0	16.7	7.2
0.4 to 0.49	18.8	19.3	1.5	2.5	16.7	2.3
0.5 and over	68.8	15.7	1.0	5.0	0.0	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, Census of Population, 1986 and 1996

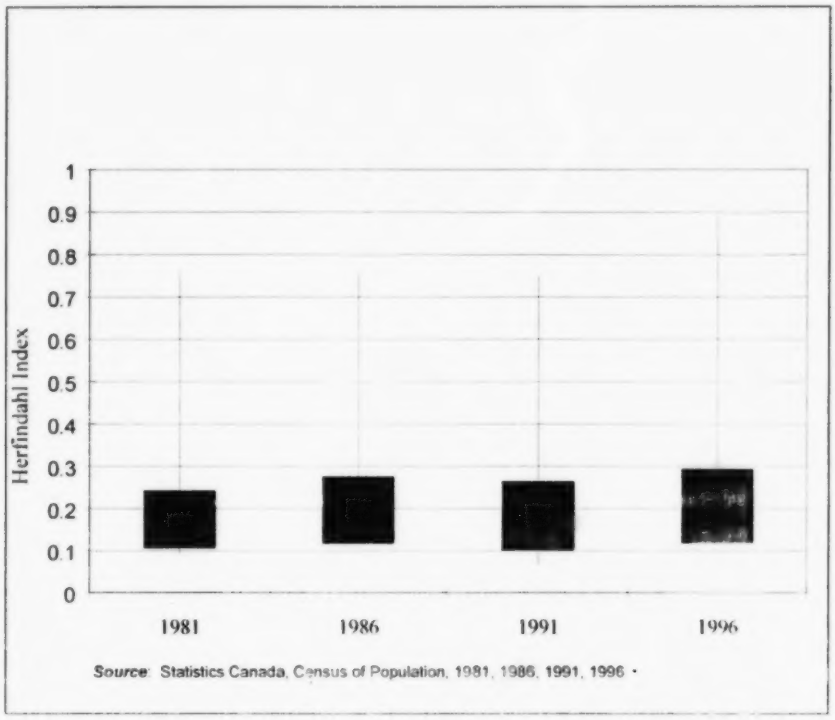
When the CCSs are separated into those which became more diversified (HI negative) and those which became more specialized (HI positive) between 1981 and 1996, a clearer pattern emerges.

Figure 11 - In the rural CCSs that diversified between 1981 and 1996, the mean and the range both decreased



For the rural CCSs that diversified between 1981 and 1996, the mean and range of diversification both decreased, regardless of whether the economy was in recession or not (Figure 11). The level of diversification appears to be converging.

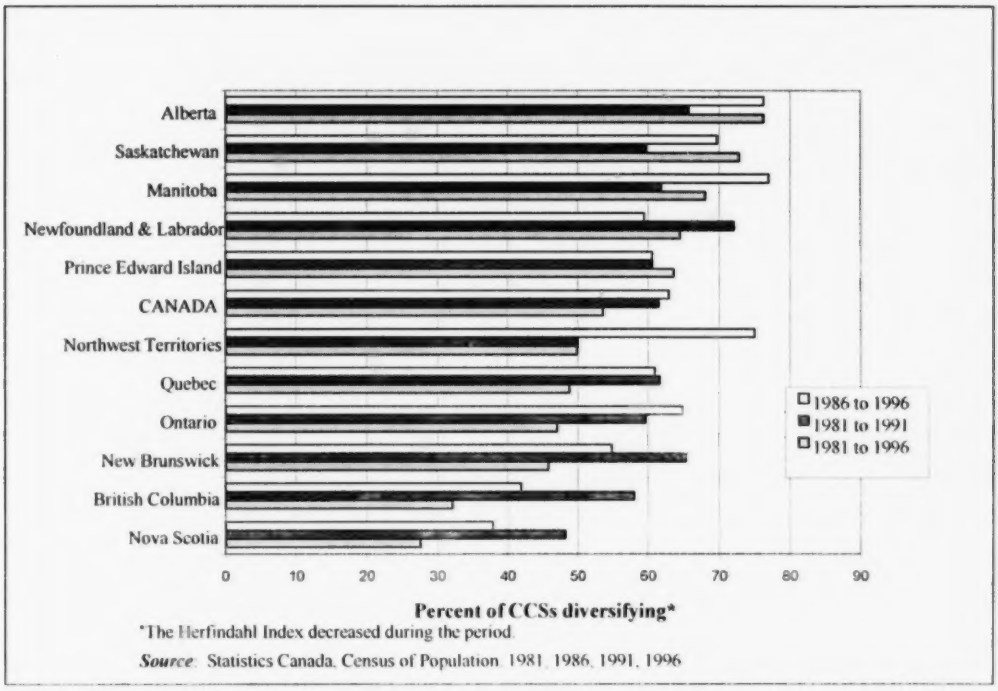
Figure 12 - In the rural CCSs that specialized between 1981 and 1996, the average level of specialization increased in 1986 and 1996, and the range increased in 1996



For the CCSs that became more specialized between 1981 and 1996, however, the average level of specialization was lower in 1981 than in 1986, fell during the recession of 1991, and increased during booms (1986 and 1996) (Figure 12). The range of the index increased markedly in 1996.

When the proportion of rural CCSs that diversified between (a) 1981 and 1996, (b) 1981 and 1991 (the recession years), and (c) 1986 and 1996 (the boom years) are compared, a different pattern emerges for each province (Figure 13).

Figure 13 - The effects of the business cycle on diversification



*The Herfindahl Index decreased during the period.

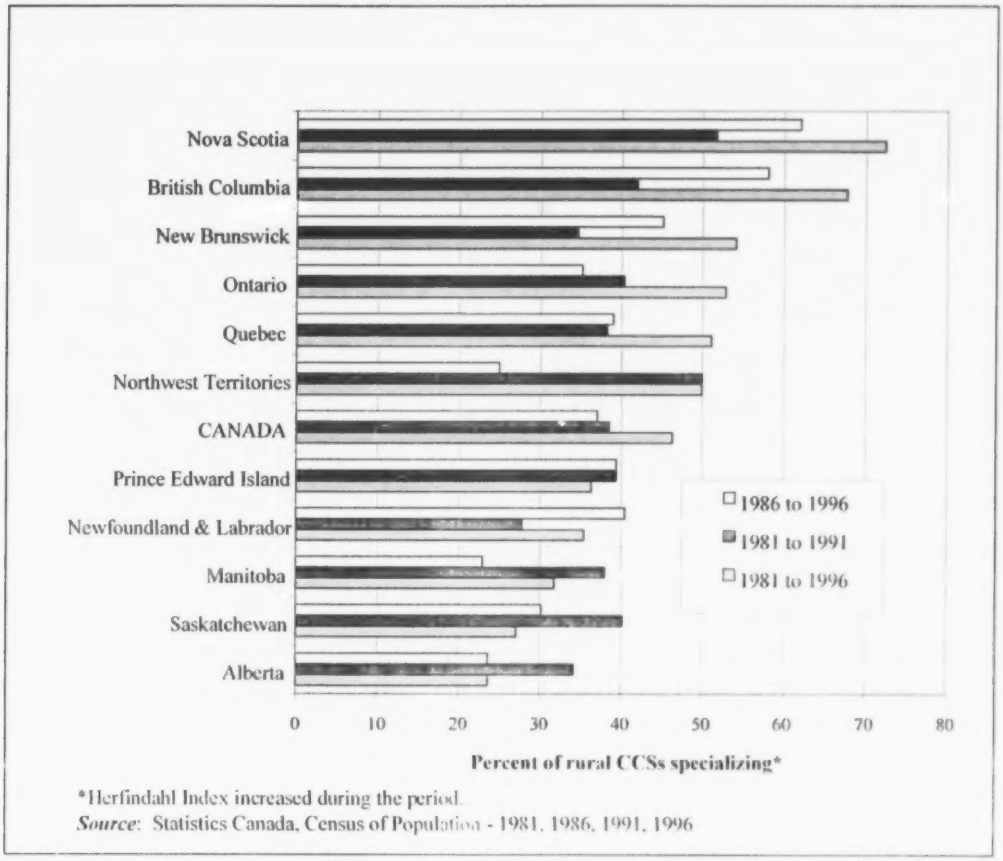
Source: Statistics Canada, Census of Population, 1981, 1986, 1991, 1996

A higher share of CCSs diversified in Manitoba, for example, between 1986 and 1996, but in New Brunswick a higher share diversified between 1981 and 1991. The highest growth in the number of CCSs that diversified were in the three Prairie Provinces and the Northwest Territories, and the slowest growth occurred in Nova Scotia where most of the CCSs were already diversified.

The results reflect which industrial sectors were affected the most by the recessions. The data suggest that the 1991 recession hit harder in Newfoundland and Labrador, New Brunswick, British Columbia and Nova Scotia where fishing and logging and forestry are dominant. In the predominantly agricultural provinces of Alberta, Saskatchewan, Manitoba and Ontario, there seems to have been more diversification from peak to peak than from trough to trough.

One can draw different conclusions from the data depending on whether the time period is from peak to peak or from trough to trough. In order to correct for business cycle effects, the time range for analysis in this study is primarily from 1986 to 1996.

Figure 14 - The effects of the business cycle on specialization



*Herfindahl Index increased during the period.

Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

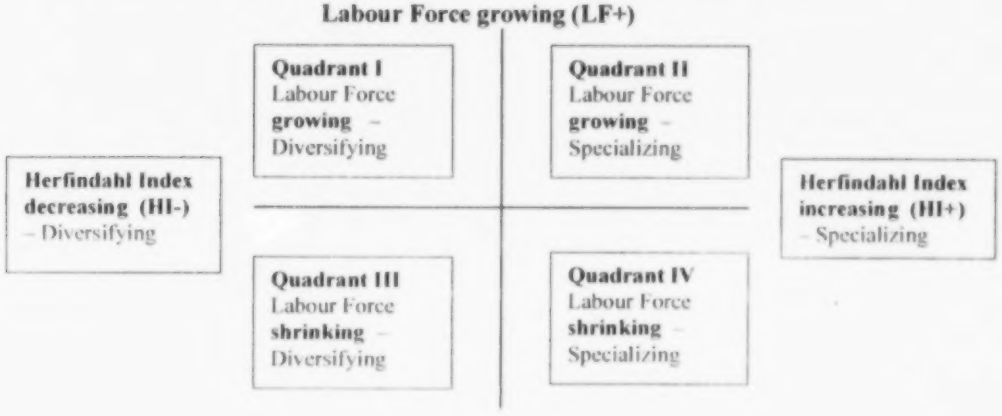
Figure 14 shows the corollary – the percent of rural CCSs that specialized between 1981 and 1986. In the provinces that were more highly diversified – Nova Scotia, New Brunswick, British Columbia and Prince Edward Island – the largest proportion of CCSs became more specialized.

Related to the business cycle effects are the changes in the level of employment and the size of the population in each community. If a community has a growing economy and is diversifying, employment opportunities are becoming more diverse. If a community is experiencing a shrinking labour force and a diversifying economy, the leading industrial sector is probably shedding labour. If the labour force in a community is shrinking, it will experience either diversification or specialization depending upon which industrial sectors are reducing their work forces. Similarly if the labour force is expanding, it will experience either diversification or specialization depending on which industrial sectors are increasing their work forces. A decline in employment can be the result of the

substitution of capital for labour as more efficient technology is adopted rather than industry downsizing (as pointed out by Fletcher *et al* 2001).

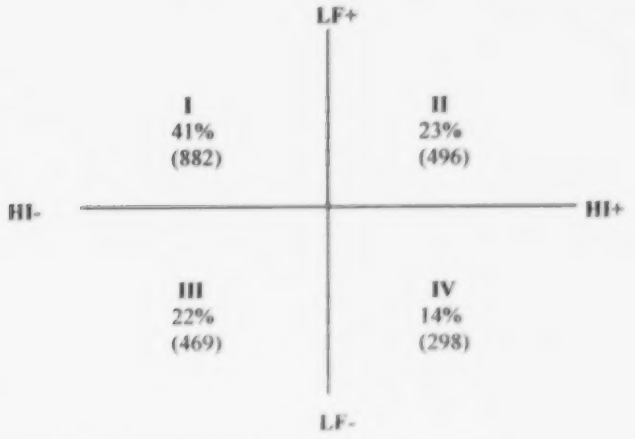
In Quadrant I (Figure 15), a community has a growing work force and is diversifying. In Quadrant II, a community has a growing work force and is specializing. In Quadrant III, a community has a shrinking work force and is diversifying, and in Quadrant IV, a community has a shrinking work force and is specializing.

Figure 15 - Changes in experienced labour force and diversification



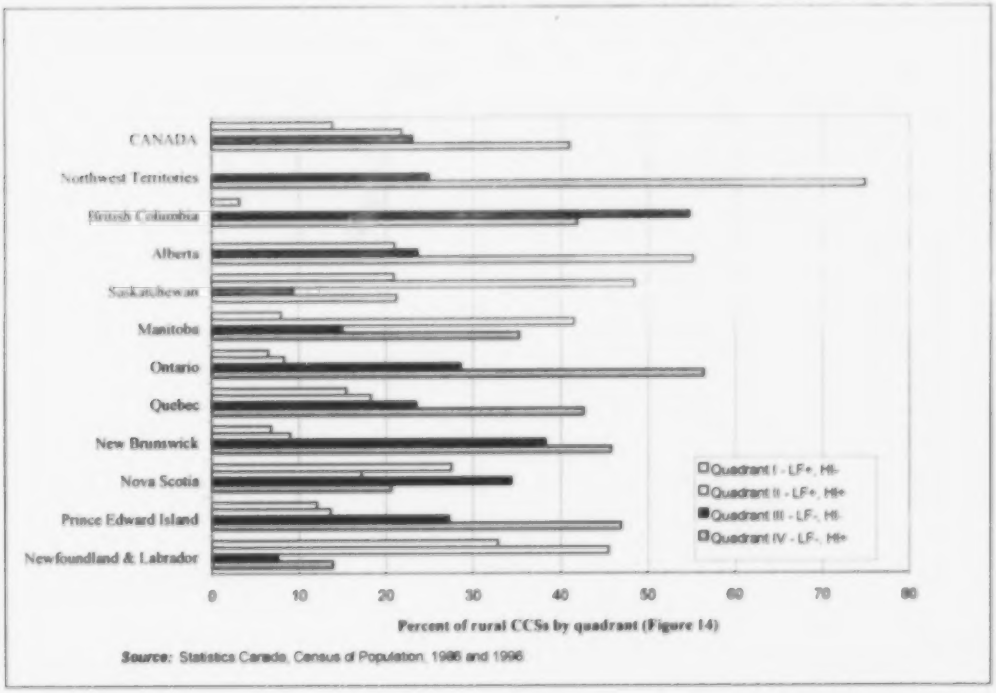
For all the 2,145 rural CCSs in Canada, the model is shown in Figure 16.

Figure 16 – Forty-one percent of the rural CCSs became more diversified while the labour force grew (1986 to 1996)



Forty-one percent of the rural CCSs experienced employment growth and increased diversification (Quadrant I, Figure 16). A further 23% had growth in the labour force, but their economies were specializing (Quadrant II, Figure 16). The labour force decreased in about 36% of the CCSs (Quadrants III and IV, Figure 16).

Figure 17 - Provincial CCSs by Labour Force and Herfindahl Index Quadrant (See Figure 14.)



Results by province are shown in Figure 17, Table 8 and Maps 1 to 5.[14] The maps show the geographic distribution of the rural CCSs by quadrant. Map 1, 'Rural Labour Force Growing and Diversifying' corresponds with Quadrant I. Map 2, 'Rural Labour Force Growing and Specializing,' illustrates Quadrant II CCSs. Quadrant III CCSs are depicted in Map 3, 'Rural Labour Force Shrinking and Diversifying.' Quadrant IV is shown on Map 4, 'Rural Labour Force Shrinking and Specializing'. Map 5 gives an Overview of all quadrants.

There is tremendous variation among the provinces. In every province there were rural CCSs in Quadrant I (Map 1) and Quadrant II (Map 2), where the labour force was growing. Some of these CCSs are diversifying and some specializing. All provinces except British Columbia and the Northwest Territories had CCSs in Quadrant III (Map 3) where the labour force was shrinking and the economy was diversifying. All provinces except Alberta and the Northwest Territories contained CCSs in Quadrant IV (Map 4) where the labour force was shrinking and the economy specializing.

The labour force grew and the economy diversified in 882 rural CCSs (Quadrant I). The majority of these were located in Central Canada – 47% in Quebec and 25% in Ontario. Most of the 496 CCSs in which the labour force grew and the economy specialized were also in Central Canada – 46% in Quebec and 22% in Ontario (Quadrant II). Thirty-eight percent of the CCSs in Quadrant III, where the labour force shrank while the economy diversified, were located in Quebec, and another 30% were in Saskatchewan. More than half of the rural CCSs that specialized as the labour force was shrinking (Quadrant IV) were located in Quebec, and 21% were in Saskatchewan.

Rural census consolidated sub-divisions were most likely to be in Quadrant I in Ontario, Quebec, Alberta, New Brunswick, and Prince Edward Island (Map 1). CCSs were most likely to be in Quadrant II in British Columbia and Nova Scotia (Map 2). CCSs were most likely to be in Manitoba, Saskatchewan or Newfoundland and Labrador in Quadrant III as fortunes in agriculture and fishing declined (Map 3). If a CCS was in Quadrant IV, it was most likely to be found in Quebec or Saskatchewan (Map 4).

Between 1986 and 1996, the labour force grew in 1,378 (64%) of the 2,145 rural CCSs in this study. About 71% (974) of these 1,368 were in Quebec and Ontario. In Quebec (where 46% of the rural CCSs were located), 43% of the CCSs have growing, diversifying economies and 24% had growing, specializing economies. About 34% of Quebec's rural CCSs were experiencing a decrease in the labour force. The labour force grew in all of British Columbia's CCSs except one. Labour force growth was also strong in New Brunswick. Of the 767 rural CCSs in which the labour force decreased, 532 (69%) were located in Quebec and Saskatchewan. Sixty-two (78%) of Newfoundland's rural CCSs experienced a decline in the labour force.

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[14] Maps produced by the Spatial Analysis and Geomatics Applications section (SAGA), Agriculture Division, Statistics Canada, 2002.

Table 8 - Change in the labour force and the Herfindahl Index in rural CCSs between 1986 and 1996					
Quadrant	**I**	**II**	**III**	**IV**	
Change in LF* Change in HI*	**LF+ HI-**	**LF+ HI+**	**LF- HI-**	**LF- HI+**	**Total**
Newfoundland & Labrador	11	6	36	26	79
Prince Edward Island	31	18	9	8	66
Nova Scotia	6	10	5	8	29
New Brunswick	61	51	12	9	133
Quebec	417	230	179	151	977
Ontario	217	110	32	25	384
Manitoba	40	17	47	9	113
Saskatchewan	62	27	141	61	291
Alberta	21	9	8	0	38
British Columbia	13	17	0	1	31
Northwest Territories	3	1	0	0	4
CANADA	882	496	469	298	2,145
	Percent of CCSs by quadrant				
Newfoundland & Labrador	1.2	1.2	7.7	8.7	3.7
Prince Edward Island	3.5	3.6	1.9	2.7	3.1
Nova Scotia	0.7	2.0	1.1	2.7	1.4
New Brunswick	6.9	10.3	2.6	3.0	6.2
Quebec	47.3	46.4	38.2	50.7	45.5
Ontario	24.6	22.2	6.8	8.4	17.9
Manitoba	4.5	3.4	10.0	3.0	5.3
Saskatchewan	7.0	5.4	30.1	20.5	13.6
Alberta	2.4	1.8	1.7	12.8	1.8
British Columbia	1.5	3.4	0.0	0.3	1.4
Northwest Territories	0.3	0.2	0.0	0.0	0.2
CANADA	100.0	100.0	100.0	100.0	100.0
	Percent of CCSs by province				
Newfoundland & Labrador	13.9	7.6	45.6	32.9	100.0
Prince Edward Island	47.0	27.3	13.6	12.1	100.0
Nova Scotia	20.7	34.5	17.2	27.6	100.0
New Brunswick	45.9	38.3	9.0	6.8	100.0
Quebec	42.7	23.5	18.3	15.5	100.0
Ontario	56.5	28.6	8.3	6.5	100.0
Manitoba	35.4	15.0	41.6	8.0	100.0
Saskatchewan	21.3	9.3	48.5	21.0	100.0
Alberta	55.3	23.7	21.1	0.0	100.0
British Columbia	41.9	54.8	0.0	3.2	100.0
Northwest Territories	75.0	25.0	0.0	0.0	100.0
CANADA	41.1	23.1	21.9	13.9	100.0

*Key: LF - Experienced labour force, HI - Herfindahl Index

Source: Statistics Canada, Census of Population - 1986 and 1996

Map 1

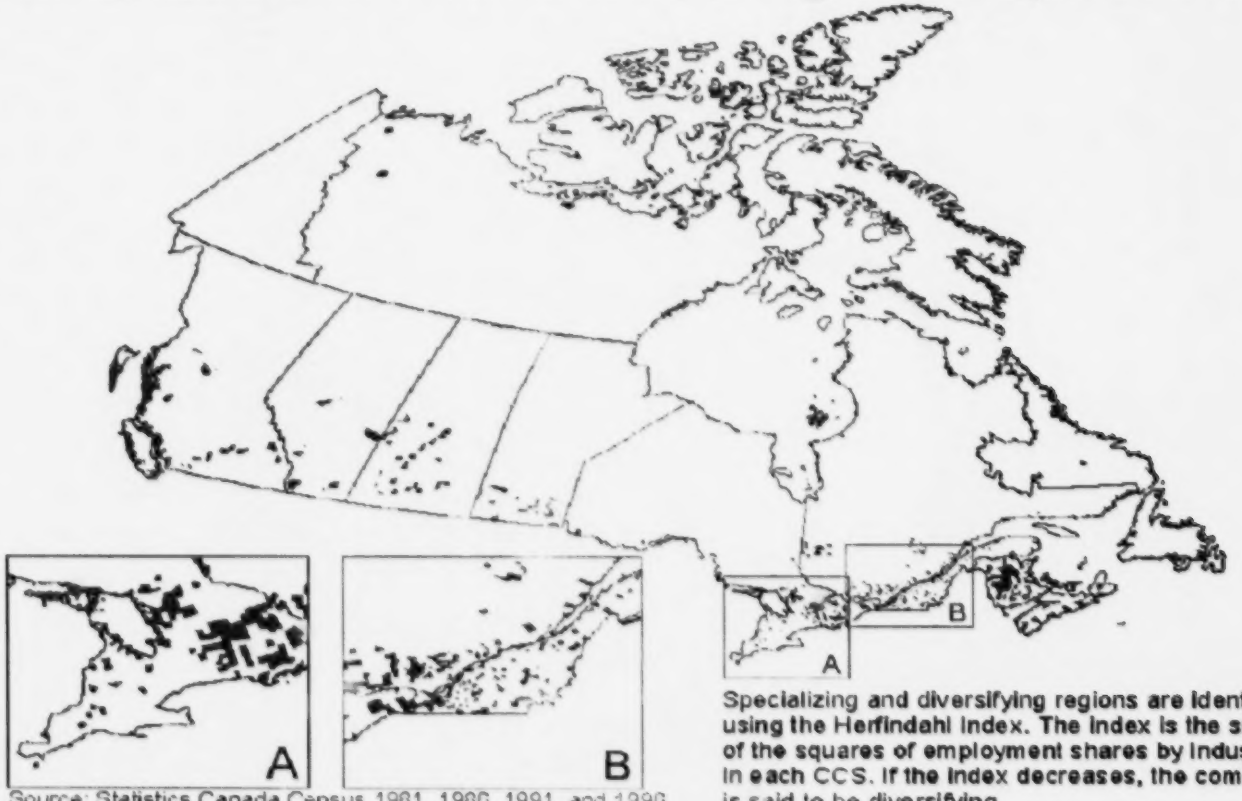
Rural Labour Force Growing and Diversifying

Source: Statistics Canada Census 1981, 1986, 1991, and 1996

Specializing and diversifying regions are identified using the Herfindahl Index. The index is the sum of the squares of employment shares by industry in each CCS. If the index decreases, the community is said to be diversifying.

Map 2

Rural Labour Force Growing and Specializing

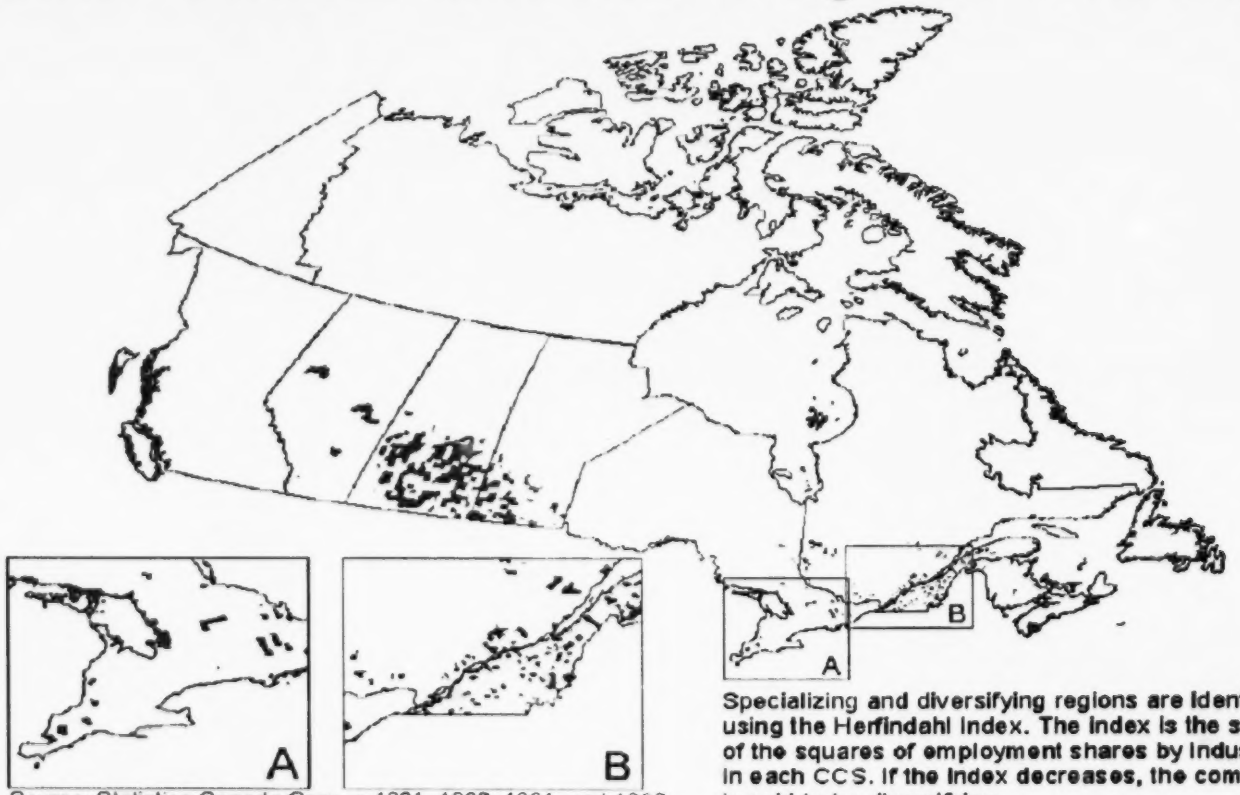


Source: Statistics Canada Census 1981, 1986, 1991, and 1996

Specializing and diversifying regions are identified using the Herfindahl Index. The index is the sum of the squares of employment shares by industry in each CCS. If the index decreases, the community is said to be diversifying.

Map 3

Rural Labour Force Shrinking and Diversifying



Source: Statistics Canada Census 1961, 1966, 1991, and 1996

Specializing and diversifying regions are identified using the Herfindahl index. The index is the sum of the squares of employment shares by industry in each CCS. If the index decreases, the community is said to be diversifying.

Map 4

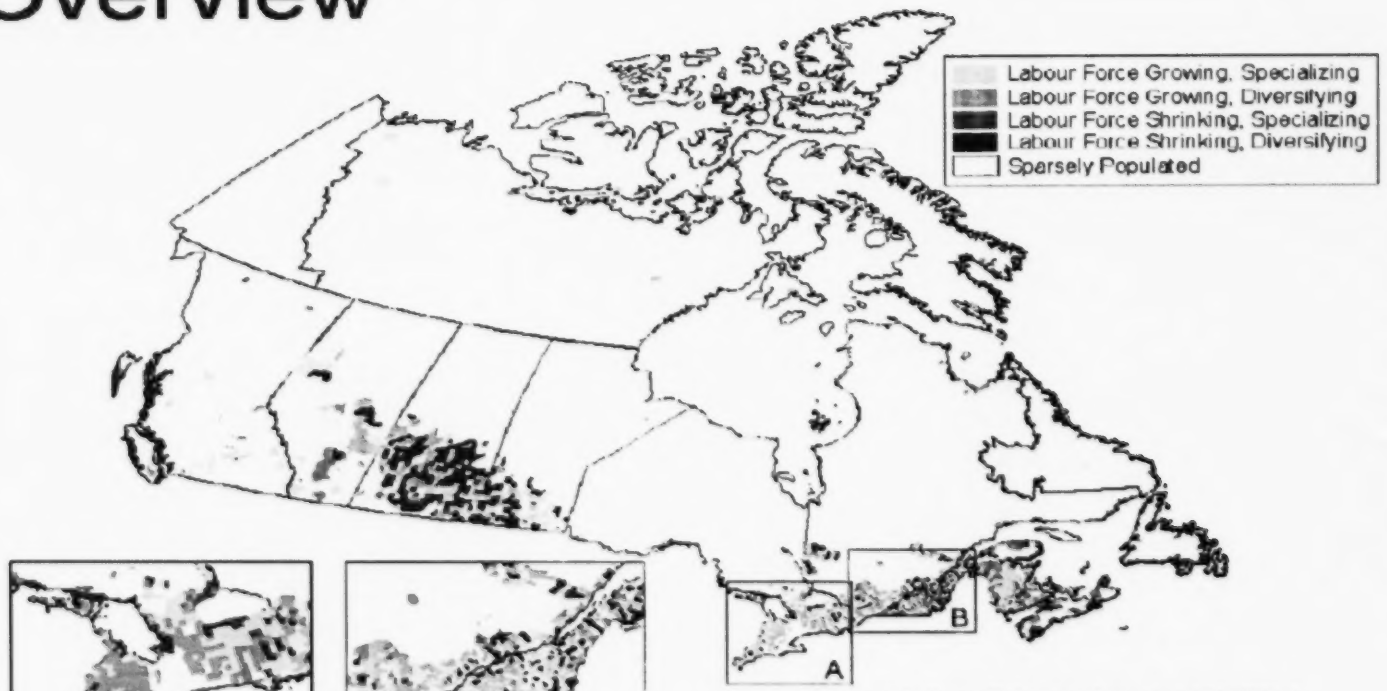
Rural Labour Force Shrinking and Specializing

Source: Statistics Canada Census 1961, 1966, 1991, and 1996

Specializing and diversifying regions are identified using the Herfindahl Index. The index is the sum of the squares of employment shares by industry in each CCS. If the index decreases, the community is said to be diversifying.

Map 5

Overview



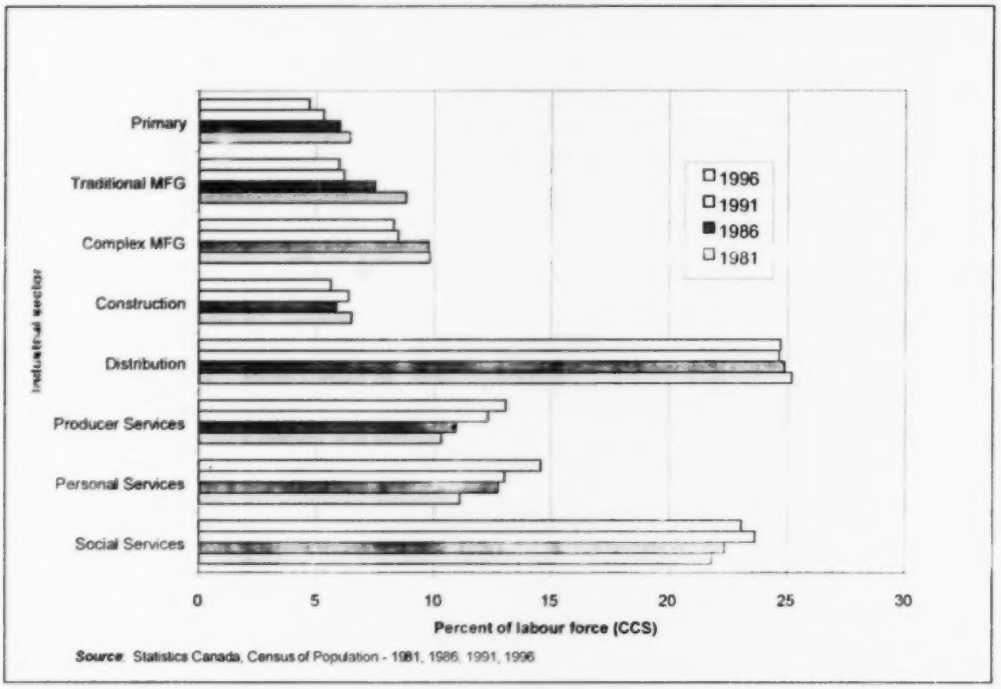
Source: Statistics Canada Census 1981, 1986, 1991, and 1996

Specializing and diversifying regions are identified using the Herfindahl Index. The index is the sum of the squares of employment shares by industry in each CCS. If the index decreases, the community is said to be diversifying.

5.5 Diversification and specialization by industrial sector

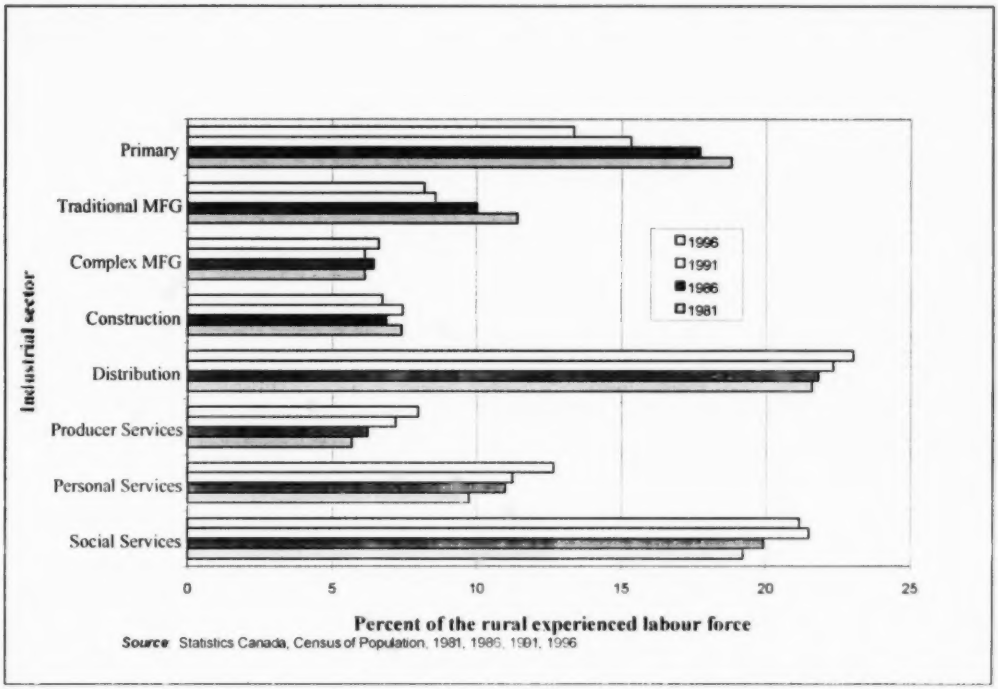
The proportion of the experienced labour force attached to each industrial sector for all CCSs in Canada as a whole is shown in Figure 18. In relative terms, the proportion of the experienced labour force attached to the primary and manufacturing sectors have declined, while the proportion in services has increased.

Figure 18 - The proportion of the Canadian labour force in producer and personal services has increased between 1981 and 1996



The proportion of the rural experienced labour force in each industrial sector is shown in Figure 19. The primary sector (agriculture, mining, forestry and fishing) has a stronger role in the rural CCSs than it does nationally. The proportion of the labour force in producer services and personal services increased steadily between 1981 and 1996. There was a slight decline in the share of labour in social services in 1996.

Figure 19 - The proportion of the rural labour force in producer services increased between 1981 and 1996



5.6 The primary sector

The economic base of rural communities is primarily the primary sector. In this section, we analyze the communities in which the dominant industry is agriculture, fishing, forestry or mining. The dominant industry is defined as one in which 20% or more of the experienced labour force is attached to that one industry.

5.61 Agriculture

In 1981, agriculture was the dominant industry in 747 CCSs, 35% of all rural census consolidated sub-divisions (Table 9). The number of agriculture-dominated CCSs fell year by year until there were 590 in 1996, 28 % of rural CCSs. In 1981, 272 (36%) of these were located in Saskatchewan and 216 (29%) in Quebec). By 1996 Saskatchewan's share was 259 (44%) and Quebec's 161 (27%). (The number decreased as the CCSs became more diversified and had less than 20% employed in agriculture.) At the same time, the labour force in the agriculture-dominated CCSs decreased by 25% – from 192,555 in 1981 to 143,605 in 1996. Between 1981 and 1996, there was a decline of more than 14 thousand workers in the agriculture-dominated areas in Saskatchewan, and in Manitoba just over six thousand, (despite an increase between 1981 and 1986). This decline was due to a decline in the number of agriculture-dominated CCSs and in the

labour forces within them. (The data for the rural experienced labour force in agriculture by province is given in Appendix K.)

Table 9 - The number of agriculture-dominated* CCSs declined by 21% between 1981 and 1996

Province	Number of CCSs in Province**	1981		1986		1991		1996		% change in CCSs 1981-96	% change in LF*** 1981-96
		# of CCSs	Labour Force***	# of CCSs	Labour Force***	# of CCSs	Labour Force***	# of CCSs	Labour Force***		
Prince Edward Island	66	24	2,535	18	2,155	10	1,130	10	1,075	-58.3	-57.6
New Brunswick	133	9	1,015	6	765	1	45	3	255	-66.7	-74.9
Quebec	977	216	22,835	207	23,160	176	20,415	161	16,290	-25.5	-28.7
Ontario	384	105	34,855	74	29,355	64	22,405	51	18,045	-51.4	-48.2
Manitoba	113	90	30,145	92	32,220	91	30,935	80	23,640	-11.1	-21.6
Saskatchewan	291	272	73,410	274	78,730	272	74,665	259	59,365	-4.8	-19.1
Alberta	38	29	27,110	28	29,020	27	28,580	25	24,645	-13.8	-9.1
British Columbia	31	2	650	2	680.0	1	265	1	290	-50.0	-55.4
TOTAL**	2,033	747	192,555	701	196,085	642	178,440	590	143,605	-21.0	-25.4
% rural CCSs (2,145)	94.8	34.8		32.7		29.9		27.5			
% rural labour force (Table 2)			9.3		8.7		7.1		5.5		

*20% or more of the labour force in agriculture

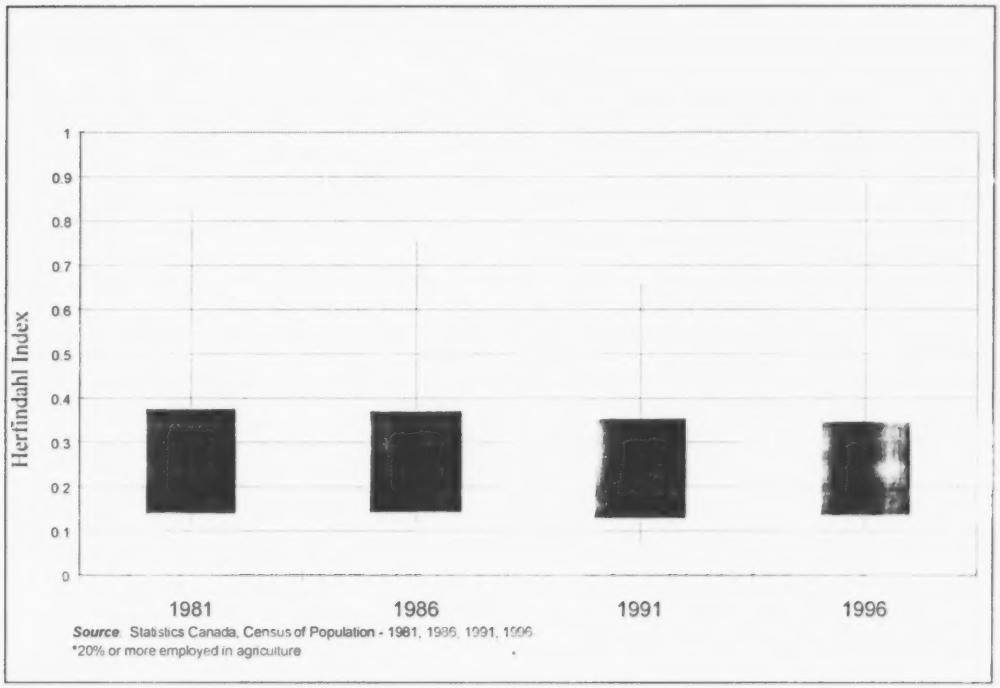
**Provinces with no agriculture-dominated CCSs were not included here.

***Labour force is the experienced labour force in the agriculture-dominated CCSs.

Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

Within the group of agriculture-dominated CCSs, the range of diversification fell steadily between 1981 and 1991, but increased in 1996 (Figure 20). In 1991, the minimum Herfindahl Index was lower than in other years, perhaps because dominant industries were hit the hardest by the downturn.

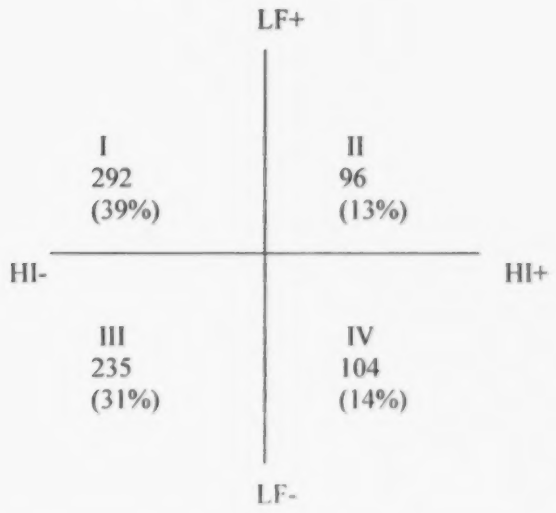
Figure 20 - The range of diversification in rural predominantly agricultural* CCSs increased between 1991 and 1996



Although the labour force engaged in agriculture decreased between 1981 and 1996, not all CCSs experienced difficulties (Figure 21). The labour force expanded in 388 (52%) of the agriculture-dominated CCSs, of which 39% diversified and 13 % specialized. This means more CCSs experienced growth in the labour force than experienced a decrease.

The labour force contracted in 339 (45%) of the CCSs, and of these 31% became more diversified and 14% more specialized. Twenty (3%) of the CCSs were stagnant – the labour force did not change between 1986 and 1996.

Figure 21 – Thirty-nine percent of the agriculture-dominated CCSs experienced growth in the labour force while diversifying



The results by province are shown in Table 10. About 35% of all the 2,145 rural CCSs included in this study were agriculture-dominated. Thirty-six percent of the agriculture-dominated CCSs were located in Saskatchewan and 29% in Quebec. The agriculture-dependent CCSs whose labour forces expanded between 1986 and 1996 represented about 18% of all rural CCSs, and those with shrinking labour forces about 16% of all rural CCSs.

The largest proportion of the agriculture-dominated CCSs that were diversifying (Quadrant I) were located in Central Canada – Quebec had 33% and Ontario 23%. Of the agriculture-dominated CCSs that experienced a decrease in the labour force while specializing (Quadrant II), 42% were in Quebec, 23% in Saskatchewan and 18% in Ontario. The greatest proportion of Quadrant III agriculture-dominated CCSs were in Saskatchewan (54%). Fifty-five percent of the agriculture-dominated CCSs in which the labour force contracted while the economy specialized were in Saskatchewan (Quadrant IV).

Saskatchewan and Manitoba were the only two provinces in which the size of the labour force in the agriculture-dominated CCSs decreased between 1986 and 1996. Labour force contraction occurred in 184 (68%) of the Saskatchewan's agriculture-dominated CCSs and in more than half of Manitoba's. There were, however, 80 CCSs in Saskatchewan and 40 in Manitoba that experienced gains in the size of the labour force, and the majority of these CCSs were diversifying their economies at the time.

About three-quarters of Quebec's agriculture-dependent CCSs experienced labour force growth between 1986 and 1996. Almost 65% of Ontario's agriculture-dependent CCSs and 45% of Quebec's were in Quadrant I (labour force increasing, diversifying).

The majority of agriculture-dominant CCSs in Prince Edward Island, New Brunswick, Alberta and British Columbia experienced labour force growth during the period.

Table 10 - Change in the labour force and the Herfindahl Index in rural CCSs dominated by agriculture* between 1986 and 1996						
Quadrant		**I**	**II**	**III**	**IV**	**No change in LF**
Change in LF** **Change in HI****	**Total**	**LF+ HI-**	**LF+ HI+**	**LF- HI-**	**LF- HI+**	
Prince Edward Island	24	12	3	5	4	0
New Brunswick	9	4	3		2	0
Quebec	216	97	40	49	25	5
Ontario	105	68	17	9	9	2
Manitoba	90	32	8	39	7	4
Saskatchewan	272	58	22	127	57	8
Alberta	29	19	3	6	0	1
British Columbia	2	2	0	0	0	0
Total agricultural CCSs	747	292	96	235	104	20
		Percent of CCSs by quadrant				
Prince Edward Island	3.2	4.1	3.1	2.1	3.8	0.0
New Brunswick	1.2	1.4	3.1	0.0	1.9	0.0
Quebec	28.9	33.2	41.7	20.9	24.0	25.0
Ontario	14.1	23.3	17.7	3.8	8.7	10.0
Manitoba	12.0	11.0	8.3	16.6	6.7	20.0
Saskatchewan	36.4	19.9	22.9	54.0	54.8	40.0
Alberta	3.9	6.5	3.1	2.6	0.0	5.0
British Columbia	0.3	0.7	0.0	0.0	0.0	0.0
Total agricultural CCSs	100.0	100.0	100.0	100.0	100.0	100.0
		Percent of CCSs by province				
Prince Edward Island	100.0	50.0	12.5	20.8	16.7	0.0
New Brunswick	100.0	44.4	33.3	0.0	22.2	0.0
Quebec	100.0	44.9	18.5	22.7	11.6	2.3
Ontario	100.0	64.8	16.2	8.6	8.6	1.9
Manitoba	100.0	35.6	8.9	43.3	7.8	4.4
Saskatchewan	100.0	21.3	8.1	46.7	21.0	2.9
Alberta	100.0	65.5	10.3	20.7	0.0	3.4
British Columbia	100.0	100.0	0.0	0.0	0.0	0.0
Total agricultural CCSs	100.0	39.1	12.9	31.5	13.9	2.7
% of rural CCSs (2,145)	34.8	13.6	4.5	11.0	4.8	0.9

*CCSs having 20% or more of the labour force employed in agriculture in 1981

**LF - Experienced labour force, HI - Herfindahl Index

Source: Statistics Canada, Census of Population - 1986 and 1996

5.62 Fishing and trapping

Fishing was the dominant sector in 26 rural census consolidated sub-divisions in the four Atlantic Provinces and in Quebec (Table 11). As employment patterns changed, the number of fishing-dominated CCSs increased by 35% between 1981 and 1996. In 1981, Prince Edward Island had the largest share of fishing-dominated CCSs – 10 (15%) of its 66 CCSs were fishing-dominated, 13 (18%) in 1996. In Newfoundland, the number of fishing-dominant CCSs increased from nine in 1981 to 15 in 1996 (Also see Appendix L for data.).

The experienced labour force in the fishing-dominated CCSs increased by 11% between 1981 and 1996 due to a 35% increase in the number of fishing-dominated CCSs. The largest proportion were in Newfoundland, where 2,245 (38%) were counted in the labour force in 1981. By 1996, almost 42% of the labour force in fishing-dominated CCSs were living in Newfoundland.

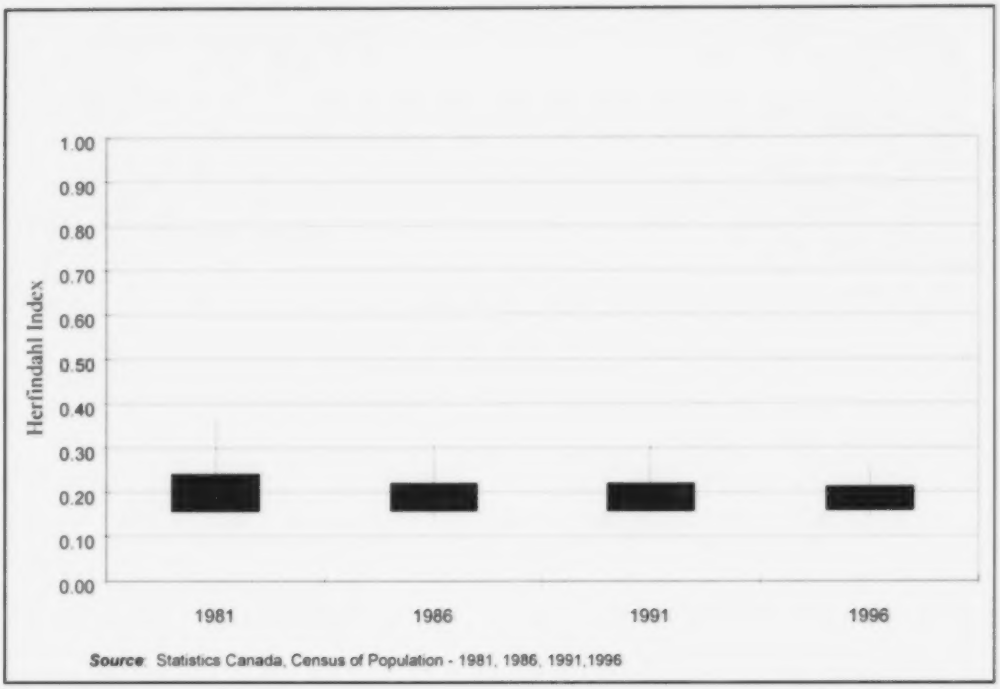
Within the group of 26 fishing-dominated CCSs, eight had 20% or more of their labour force engaged in fishing manufacturing (Table 12). A further 4,270 workers were in fish-related employment in 1981. The number declined to 4,000 in 1996, a drop of 6%. In Newfoundland the labour force in the CCSs that were both fishing-dominated and fish manufacturing-dominant decreased by 46% between 1981 and 1996. In contrast, the labour force grew in Prince Edward Island, Nova Scotia and New Brunswick.

The number of fishing-dependent CCSs increased during the period, which suggests more specialization. Yet the level of diversification in the 1981 fishing-dominated CCSs was very high and increasing between 1986 and 1996 (Figure 22). The range of diversification and specialization also decreased over the same period, particularly in 1996. As the dominant industry (fishing) shed labour, the economy appeared to be more diversified.

Table 11 - The rural labour force in fishing-dominated* CCSs increased by 11% between 1981 and 1996											
	Number of CCSs in	1981		1986		1991		1996		% change in CCSs	% change in LF
Province	province	# of CCSs	Labour force	# of CCSs	Labour force	# of CCSs	Labour force	# of CCSs	Labour force	1981-96	1981-96
Newfoundland and Labrador	79	9	2,245	9	2,225	13	3,050	15	2,765	66.7	23.2
Prince Edward Island	66	10	1,265	13	1,735	9	1,505	13	1,685	30.0	33.2
Nova Scotia	29	2	1,215	2	1,575	1	1,120	1	1,060	-50.0	-12.8
New Brunswick	133	4	780	5	985	5	835	5	1,075	25.0	37.8
Quebec**	977	..	..	..	..	..	..	..	..	..	..
TOTAL	1,284	25	5,505	29	6,520	28	6,510	34	6,585	36.0	19.6
% rural CCSs (2,145)	59.9	1.2		1.4		1.3		1.6			
% rural labour force (Table 3)			0.3		0.3		0.3		0.3		
*20% or more of experienced labour force employed in fishing and trapping **Data not released for reasons of confidentiality.											
Source: Statistics Canada. Census of Population - 1981, 1986, 1991, 1996											

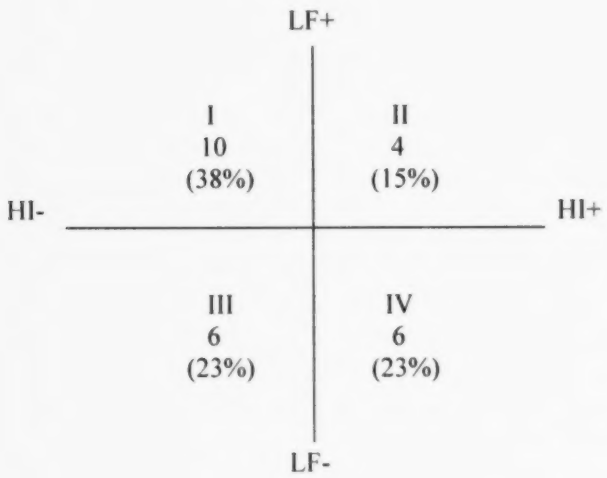
Table 12 – Rural labour force in fishing-dominated* CCSs (Table 12) that are also fish manufacturing-dominant*										
	1981		1986		1991		1996		% change in CCSs	% change in LF
Province	CCSs	Labour Force	CCSs	Labour Force	CCSs	Labour Force	CCSs	Labour Force	1981-96	1981-96
Newfoundland and Labrador	4	2,155	3	1,430	7	2,425	2	1,165	-50.0	-45.9
Prince Edward Island	1	585	3	1,190	2	980	3	925	200.0	58.1
Nova Scotia	1	935	1	1,215	1	1,000	1	1,065	0.0	13.9
New Brunswick	2	410	2	635	2	505	2	845	0.0	106.1
Quebec	1	185								-100.0
TOTAL	9	4,270	9	4,470	12	4,910	8	4,000	0.0	-6.3
*20% or more of experienced labour force employed in fishing and trapping and in fishing manufacturing										
Source: Statistics Canada. Census of Population - 1981, 1986, 1991, 1996										

Figure 22 - The fishing-dependent CCSs became more diversified in 1996 and the range of diversification decreased



More than half of the fishing-dominated CCSs (53%) experienced growth in the labour force, ten becoming more diversified, four becoming more specialized (Figure 23). The labour force shrank in the remaining twelve (46%), half of which specialized and half diversified.

Figure 23 – Ten of the 26 fishing-dependent CCSs diversified as the labour force expanded



The provincial results are shown in Table 13. Fourteen fishing-dominated CCSs experienced labour force growth between 1986 and 1996. The largest share (39%) is found in Quadrant I (labour force increasing, diversifying), since ten CCSs diversified while their labour forces expanded. Five of the CCSs in Quadrant I were located in Prince Edward Island. Quebec's one CCS in this category experienced growth in the labour force between 1986 and 1996, but it was only a two-percent increase.

The labour force decreased in six out of Newfoundland and Labrador's nine fishing-dominated communities, and a Newfoundland and Labrador CCS would be most likely to be in Quadrant III. This indicates that the leading sector was shedding labour. In Prince Edward Island, labour force growth occurred in 6 of the province's fishing communities. A fishing-dominated CCS on the Island would most likely be in Quadrant I, although three of its ten fishing CCSs were in Quadrant IV.

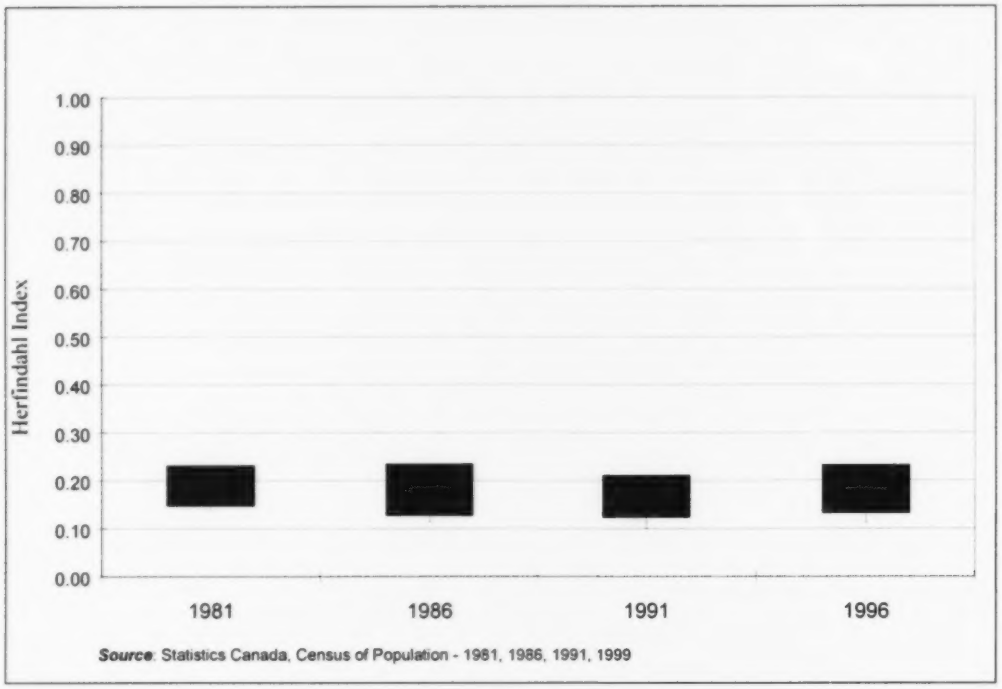
Table 13 - Change in the labour force and the Herfindahl Index in rural CCSs dominated by fishing - 1986 to 1996					
Quadrant		**I**	**II**	**III**	**IV**
Change in LF Change in HI****	**Total**	**LF+ HI-**	**LF+ HI+**	**LF- HI-**	**LF- HI+**
Newfoundland and Labrador	9	2	1	4	2
Prince Edward Island	10	5	1	1	3
Nova Scotia	2	1	0	0	1
New Brunswick	4	2	1	1	0
Quebec	1	0	1	0	0
Total fishing CCSs	26	10	4	6	6
	Percent of CCSs by quadrant				
Newfoundland and Labrador		20.0	25.0	66.7	33.3
Prince Edward Island		50.0	25.0	16.7	50.0
Nova Scotia		10.0	0.0	0.0	16.7
New Brunswick		20.0	25.0	16.7	0.0
Quebec		0.0	25.0	0.0	0.0
Total fishing CCSs		100.0	100.0	100.0	100.0
	Percent of CCSs by province				
Newfoundland and Labrador	100.0	22.2	11.1	44.4	22.2
Prince Edward Island	100.0	50.0	10.0	10.0	30.0
Nova Scotia	100.0	50.0	0.0	0.0	50.0
New Brunswick	100.0	50.0	25.0	25.0	0.0
Quebec	100.0	0.0	100.0	0.0	0.0
Total fishing CCSs	100.0	38.5	15.4	23.1	23.1
% of rural CCSs (2,145)	1.2	0.5	0.2	0.3	0.3
*CCSs having 20% or more of the labour force employed in fishing in 1981					
**LF - Experienced labour force, HI - Herfindahl Index					
Source: Statistics Canada, Census of Population - 1986 and 1996					

5.63 Logging and forestry

In 1981 there were 78 forestry-dominated CCSs, most of which were located in Quebec (88%) (Table 14). By 1996 the number of forestry-dominated CCSs had fallen to 31 forestry-dominated CCSs, 28 in Quebec. From a high of 5,750 workers in the forestry-dominated CCSs in 1981, the number of workers decreased during the 1991 recession to 1,590, recovering somewhat to 1,691 in 1996. The number of CCSs dropped by 60% between 1981 and 1996, and the labour force by 71%. By 1996 there were no rural forestry-dominated CCSs in British Columbia. (Also see Appendix M.)

Table 14 - The rural labour force in forestry-dominated* CCSs decreased by 71% – 1981 to 1996											
Province	Number of CCSs in province	1981		1986		1991		1996		% change in CCSs 1981-96	% change in LF 1981-96
		# of CCSs	Labour force	# of CCSs	Labour force	# of CCSs	Labour force	# of CCSs	Labour force		
Newfoundland and Labrador	79	0	0	1	105	0	0	2	205	0.0	0.0
New Brunswick	133	7	1,035	4	270	1	30	1	1	-85.7	-99.9
Quebec	977	69	4,120	42	2,375	30	1,560	28	1,485	-59.4	-64.0
Ontario	384	0	0	1	40	0	0	0	0		
British Columbia	31	2	595	1	25	0	0	0	0	-100.0	-100.0
TOTAL	1,604	78	5,750	49	2,815	31	1,590	31	1,691	-60.3	-70.6
% rural CCSs (2,145)	74.8	3.6		2.3		1.4		1.4			
% rural labour force (Table 3)			0.3		0.1		0.1		0.1		
*20% or more of experienced labour force employed in logging and forestry											
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996											

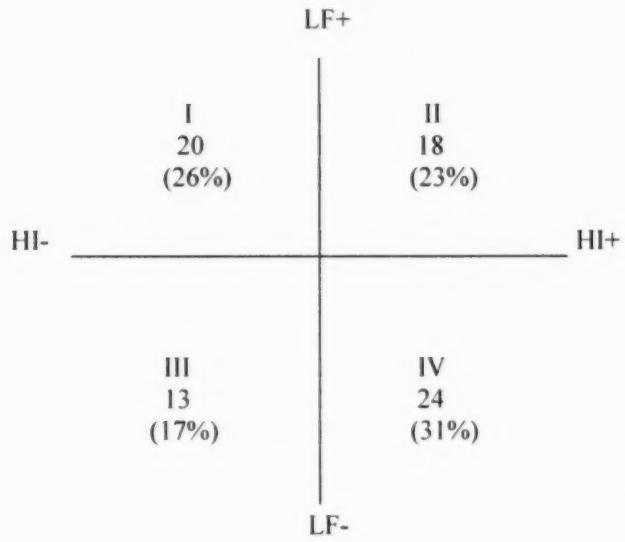
Figure 24 - In logging CCSs, the range of diversification increased during upswings, and decreased during downturns



In the forestry-dominant CCSs, the level of diversification was relatively high – the Herfindahl Index was less than 0.250 for all the CCSs in the category (Figure 24). The range of diversification increased during the boom years of 1986 and 1996, and decreased during the recession of 1991. A CCS will appear to become more diversified if its leading sector is the one affected most by a recession. The mean HI decreased between 1981 and 1986 and between 1986 and 1991. It then increased in 1996, indicating more specialization.

The labour force in forestry manufacturing in the forestry-dependent CCSs fell from 2,805 in 1981 to 850 in 1986, bottomed out at 370 in 1991, than increased to 610 in 1996. This was at least in part due to reduction in the number of forestry-dependent CCSs.

Figure 25 – In almost 49% (38) of the logging-dependent CCSs, the labour force expanded



Almost half (49%) of the 78 logging-dominated CCSs, experienced growth in the total labour force between 1986 and 1996 (Quadrants I and II of Figure 25). Of these, 20 became more diversified and 18 more specialized. Three had no change in the labour force – two of these became more specialized and one more diversified. The remaining 37 CCSs experienced a contraction of the labour force; 13 became more diversified, and the other 24 more specialized (Quadrants III and IV of Figure 25).

The labour force in traditional forestry manufacturing in the forestry-dependent CCSs decreased from 3,120 in 1986 to 2,640 in 1996, due largely to the 40% decline in the number of logging and forestry-dominated CCSs.

Sixty-nine of the 78 logging CCSs were in Quebec (Table 15). Of these, 31 experienced an increase in the labour force, 35 had a decrease in the labour force, and 3 had no change between 1986 and 1996. Seventeen diversified as the labour force increased (Quadrant I), and 14 specialized as the labour force contracted (Quadrant II).

Five of New Brunswick's seven logging CCSs experienced an increase in the total labour force between 1986 and 1996, two of these diversifying and three specializing. The labour force increased in both of British Columbia's logging-dependent CCSs, and one became more diversified and one more specialized.

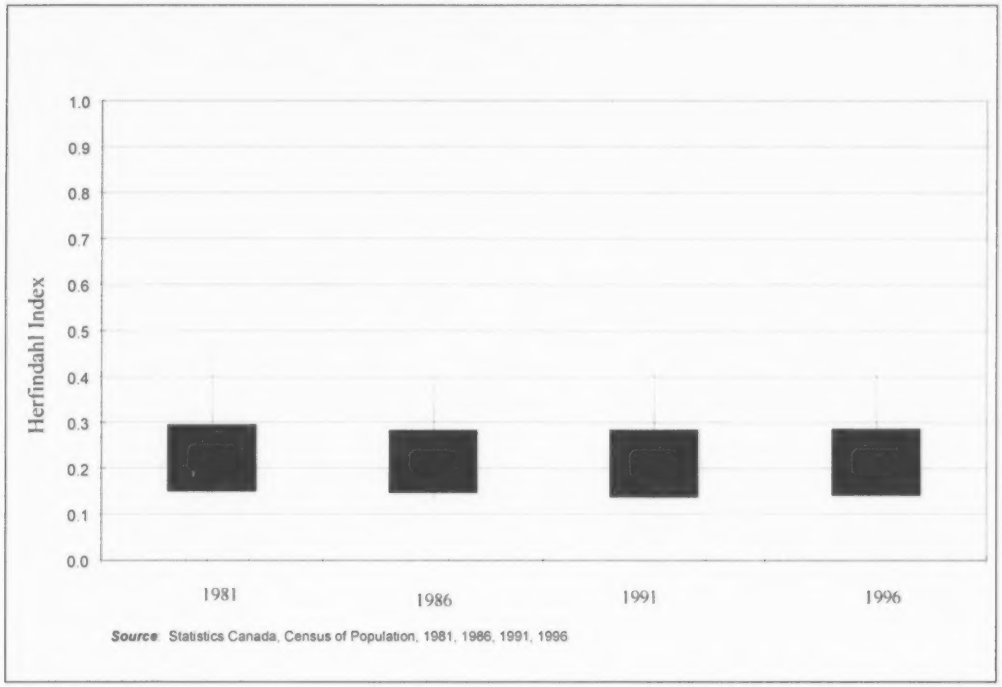
Table 15 - Change in the labour force and the Herfindahl Index in rural CCSs dominated by forestry* between 1986 and 1996						
Quadrant		**I**	**II**	**III**	**IV**	**No**
Change in LF **Change in HI****	**Total**	**LF+ HI-**	**LF+ HI+**	**LF- HI-**	**LF- HI+**	**change in LF**
New Brunswick	7	2	3	1	1	
Quebec	69	17	14	12	23	3
British Columbia	2	1	1	0	0	
Total logging CCSs	78	20	18	13	24	3
	Percent of CCSs by quadrant					
New Brunswick		10.0	16.7	7.7	4.2	
Quebec		85.0	77.8	92.3	95.8	
British Columbia		5.0	5.6	0.0	0.0	
Total		100.0	100.0	100.0	100.0	
	Percent of CCSs by province					
New Brunswick	100.0	28.6	42.9	14.3	14.3	
Quebec	100.0	24.6	20.3	17.4	33.3	4.3
British Columbia	100.0	50.0	50.0	0.0	0.0	
Total	100.0	25.6	23.1	16.7	30.8	
% of rural CCSs (2,145)	3.6	0.9	0.8	0.6	1.1	0.1
*CCSs having 20% or more of the labour force in logging and forestry in 1981						
**LF - Experienced labour force, HI - Herfindahl Index						
Source: Statistics Canada, Census of Population - 1986 and 1996						

5.64 Mining, quarrying and oil wells

In 1981 there were 34 mining-dependent CCSs in Canada – 19 (56%) of which were located in Quebec (Table 16). (Note that in this section, 'mining' refers to mining, quarrying, and oil wells.) By 1996, there were 12 remaining, eight of which were in Quebec. This represented a 65% decline in the number of mining-dominated CCSs (because the percentage employed in mining dropped below 20%). The labour force decreased from 13,685 in 1981 to 2,255 in 1996, a decline of 77%. (Also see Appendix N for mining employment in all rural CCSs.)

Table 16 - The number of mining-dominated* CCSs declined by 65% between 1981 and 1996											
	Number	1981		1986		1991		1996		% change	% change
Province	of CCSs in province	# of CCSs	Labour force	# of CCSs	Labour force	# of CCSs	Labour force	# of CCSs	Labour force	in CCSs 1981-96	in LF 1981-96
Quebec	977	20	7,260	14	4,000	12	3,480	8	2,255	-57.9	-68.9
Ontario	384	4	1,800	3	1,075	3	820	3	760	-40.0	-57.8
Manitoba	113	1	1,190	0	0	0	0	0	0	-100.0	-100.0
Saskatchewan	291	6	1,475	2	220	1	480	1	85	-83.3	-94.2
Alberta	38	1	860	1	815	1	660	0	0	-100.0	-100.0
British Columbia	31	2	1,100	1	400	1	360	0	0	-100.0	-100.0
TOTAL	1,834	34	13,685	21	6,510	18	5,800	12	3,100	-64.7	-77.3
% rural CCSs (2,145)	85.5	1.6		1.0		0.8		0.6			
% rural labour force (Table 3)			0.7		0.3		0.2		0.1		
*20% or more of the experienced labour force employed in mining											
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996											

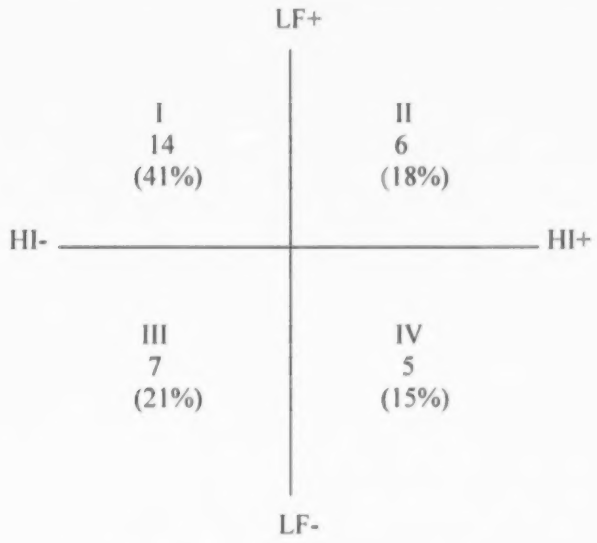
Figure 26 - There was a relatively high level of variability in the diversification of mining-dominated CCSs



In the mining-dominated CCSs, the range of the HI reached about 0.48 but fell to less than 0.3 by 1996 (Figure 26). The variability of the Herfindahl Index about the mean indicates differences in diversification and specialization among the mining-dominated CCSs. The range and level of diversification remained virtually constant between 1991 and 1996.

Figure 27 shows the changes in more detail.

Figure 27 – Forty-one percent of mining-dominant CCSs experienced labour force expansion while their economies diversified



Two of the 34 mining-dominated CCSs experienced no change in their labour forces, and both became more specialized between 1986 and 1996 (Figure 27). In fifty-nine percent (20), the labour force grew during the same period (Quadrants I and II of Figure 27). Fourteen diversified their economies as the labour force expanded, and six became more specialized. Twelve CCSs lost a portion of their labour forces (Quadrants III and IV of Figure 27).

The rural labour force in traditional mining manufacturing in the mining-dominated CCSs was negligible.

Twenty (79%) of the 34 mining CCSs were located in Quebec (Table 17). Of these 16 experienced labour force growth between 1986 and 1996. Eleven were in Quadrant I (labour force growing, diversifying), and five in Quadrant II (labour force growing, specializing). Two experienced labour force contraction.

Two mining CCSs in Ontario and one in Saskatchewan experienced labour force growth and both their economies became more diversified. The labour force decreased in 12 (35%) of the mining CCSs – in two in Quebec, two in Ontario, five in Saskatchewan, and one each in Manitoba, Alberta and British Columbia.

Table 17 - Change in the labour force and the Herfindahl Index in mining-dominated* CCSs between 1986 and 1996

Quadrant		I	II	III	IV	No
Change in LF** **Change in HI****	**Total**	**LF+ HI-**	**LF+ HI+**	**LF- HI-**	**LF- HI+**	**change in LF**
Quebec	20	11	5	1	1	2
Ontario	4	2	0	2	0	
Manitoba	1	0	0	0	1	
Saskatchewan	6	1	0	3	2	
Alberta	1	0	0	1	0	
British Columbia	2	0	1	0	1	
Total mining CCSs	34	14	6	7	5	2
		Percent of CCSs by quadrant				
Quebec	58.8	78.6	83.3	14.3	20.0	
Ontario	11.8	14.3	0.0	28.6	0.0	
Manitoba	2.9	0.0	0.0	0.0	20.0	
Saskatchewan	17.6	7.1	0.0	42.9	40.0	
Alberta	2.9	0.0	0.0	14.3	0.0	
British Columbia	5.9	0.0	16.7	0.0	20.0	
Total mining CCSs	100.0	100	100.0	100.0	100.0	
		Percent of CCSs by province				
Quebec	100.0	55.0	25.0	5.0	5.0	10.0
Ontario	100.0	50.0	0.0	50.0	0.0	
Manitoba	100.0	0.0	0.0	0.0	100.0	
Saskatchewan	100.0	16.7	0.0	50.0	33.3	
Alberta	100.0	0.0	0.0	100.0	0.0	
British Columbia	100.0	0.0	50.0	0.0	50.0	
Total mining CCSs	100.0	41.2	17.6	20.6	14.7	5.9
% of rural CCSs (2,145)	1.6	0.7	0.3	0.3	0.2	

*CCSs having 20% or more of the labour force in mining 1981

**LF - Experienced labour force, HI - Herfindahl Index

Source: Statistics Canada, Census of Population - 1986 and 1996

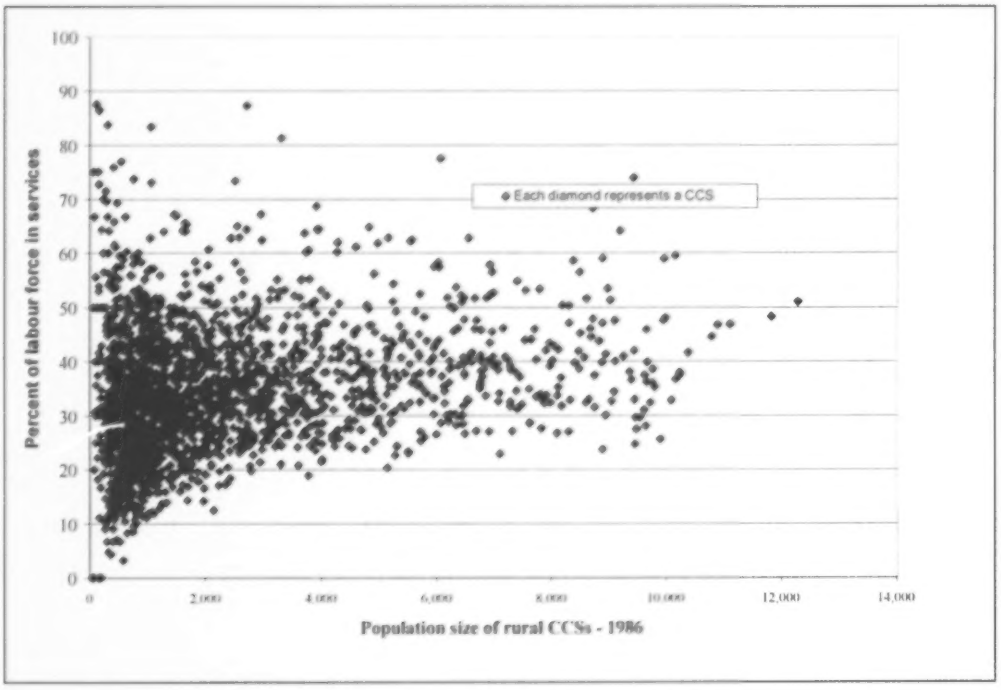
5.7 The service sector

5.71 Community size and the share of services in the labour force

The service sector expanded between 1981 and 1996 (Figures 17 and 18). It is generally proposed that the intensity of service industries in the economy will increase as the size of the community increases. Universities, large hospitals, cultural institutions and governments, for example, are generally located in larger centres. Stabler *et al* [1992] in their study of Saskatchewan classified communities according to the type of trade functions provided as the market size increases. The classifications or tiers were Minimum Convenience Centre, Partial Shopping, Complete Shopping, Secondary Wholesale-Retail, and Primary Wholesale-Retail. They found that each subsequent tier in the hierarchy offered more sophisticated goods and services that require larger market areas.

In the following figures, we plot the proportion of the labour force in services against the population size to test the theory.

Figure 28 - In the majority of small CCSs, the share of the labour force in services was in the range of 10 to 50% in 1986

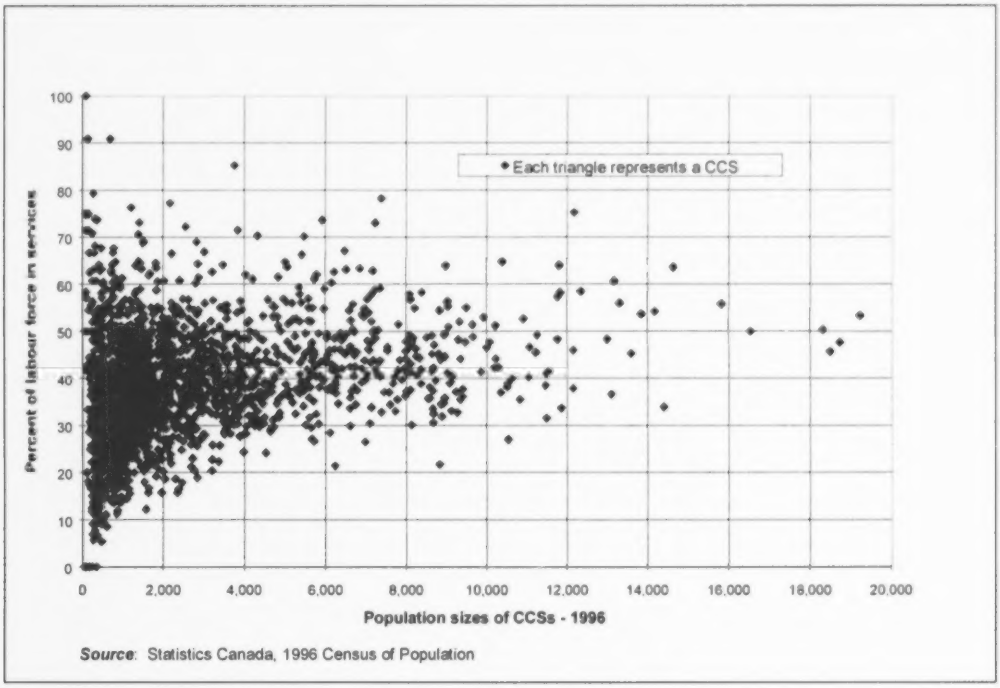


In 1986, 1,469 (68%) of the 2,145 rural CCSs had less than 2,500 inhabitants (Figure 28). A large cluster of these small CCSs – 1,325 in all – had 10 to 50% of their labour forces

in services. The population of nine CCSs grew beyond the threshold of 10,000 inhabitants between 1981 and 1986. Six of these had more than 40% of their labour forces in services, but so did a number of CCSs of varying sizes. Only the smaller CCSs with populations of less than 4,000 had less than 20% of the labour force in the service sector.

By 1996, the number of rural CCSs with populations of less than 2,500 had fallen to 1,435 (67% of rural CCSs) (Figure 29). The share of the labour force in services ranged from 10 to 50% in 1,236 of them. In eight of the nine CCSs that grew beyond 14,000 between 1981 and 1996 more than 40% of the labour force was in services.

Figure 29 - In the rural CCSs with populations greater than 10,000 in 1996, about 50% of the labour force was in services



Source: Statistics Canada, 1996 Census of Population

5.72 Producer services

Producer services have been touted by a variety of authors as a potential stimulus for economic development in lagging or peripheral areas. Coffey and Polèse [1999], however, found that the prospects were over-optimistic. High-order producer services tend to locate in large metropolitan centres. It was found that producer services are important because it is the fastest growing sector in the majority of developed economies, and that they constitute an important element of the economic base of a region. Producer services do not face the same kind of locational constraints as other sectors and may be

'footloose' enough to locate in peripheral areas. Other benefits would include offshoots of the investment, innovation and technological change contributed by producer services.

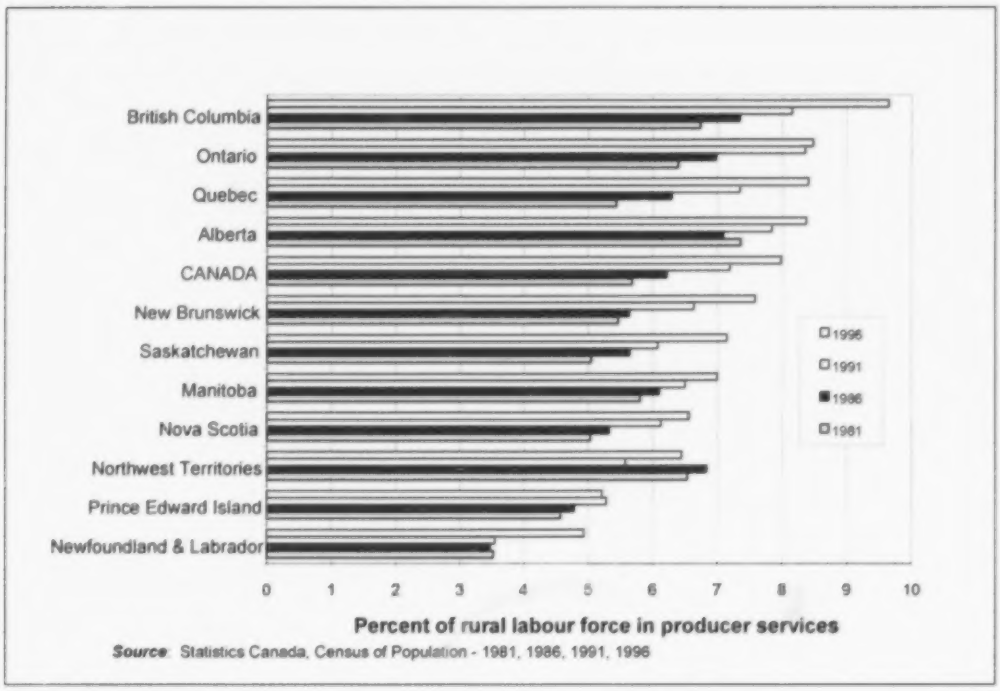
The rural labour force in producer services increased from 118,310 in 1981 to 207,700 in 1996 – an increase of 76% (Table 18 and Figure 30). The share of producer services in the workforce was less than 10% in all provinces. In absolute terms, Quebec has the largest numbers of workers in this sector – 77, 915 in 1996. This represented 38% of the Canadian total, up from 32% in 1981. Ontario was second with 33,390 (28%) in producer services in 1981, and 58,005 (28%) in 1996. In relative terms, Alberta led the provinces in the proportion of its labour force in producer services in 1981, but by 1996, British Columbia had become the leader followed by Ontario and Quebec. Producer services are least important in Prince Edward Island and Newfoundland & Labrador.

Table 18 - The rural labour force in producer services

	1981		1986		1991		1996	
Province	**Producer Services**	**%**	**Producer Services**	**%**	**Producer Services**	**%**	**Producer Services**	**%**
British Columbia	5,175	6.7	5,720	7.3	7,410	8.2	9,855	9.6
Ontario	33,390	6.4	39,965	7.0	55,850	8.4	58,095	8.5
Quebec	38,420	5.4	46,935	6.3	62,665	7.4	77,915	8.4
Alberta	7,665	7.4	8,175	7.1	9,680	7.8	10,930	8.4
CANADA	118,310	**5.7**	140,035	**6.2**	180,755	**7.2**	207,700	**8.0**
New Brunswick	6,880	5.5	7,910	5.6	10,245	6.6	12,195	7.6
Saskatchewan	10,310	5.1	12,405	5.6	13,260	6.1	15,095	7.2
Manitoba	7,030	5.8	8,045	6.1	9,130	6.5	10,020	7.0
Nova Scotia	3,605	5.0	4,230	5.3	5,185	6.1	5,295	6.6
Northwest Territories	515	6.5	695	6.8	665	5.6	895	6.5
Prince Edward Island	1,560	4.6	1,850	4.8	2,235	5.3	2,275	5.2
Newfoundland & Labrador	3,760	3.5	4,105	3.5	4,430	3.5	5,130	4.9

Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

Figure 30 - British Columbia had the highest proportion of its rural labour force in producer services in 1996



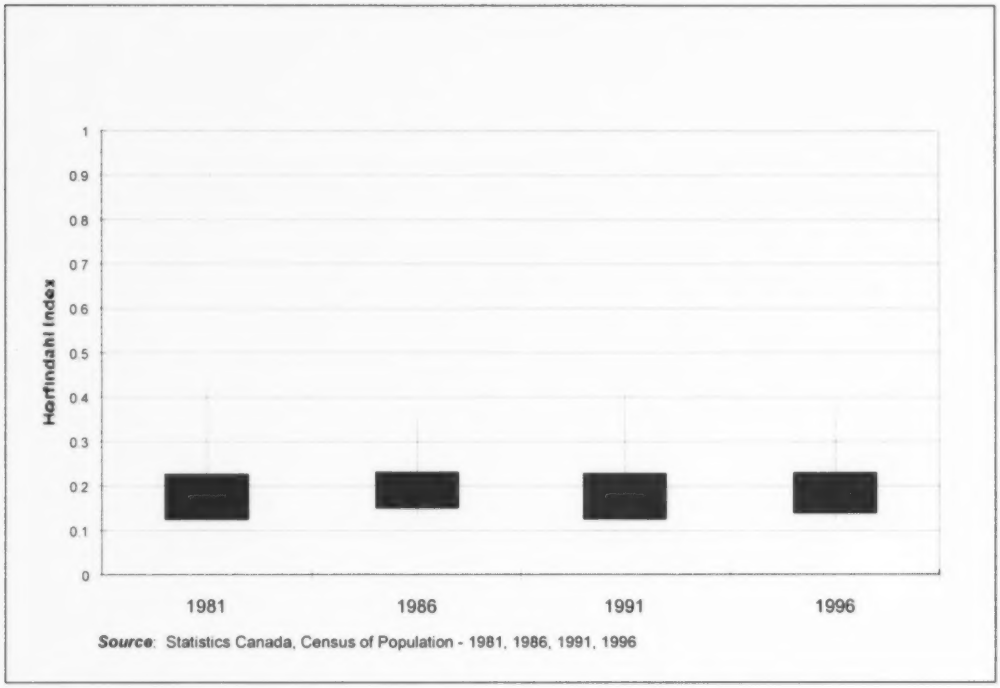
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

5.8 Diversification and specialization in the growing communities

Forty-eight of the 2,145 CCSs designated rural as of 1981 had populations greater than 10,000 by 1996. In this section, we analyze these CCSs in two ways – by the level of diversification, and by the geographic area in which they are located.

The level of diversification decreased between 1981 and 1986 – that is, these 48 CCSs became more specialized on average as their economies recovered from the recession of 1981 (Figure 31). The range of diversification decreased as the same time. By 1991, the range and variability of diversification had increased. Between 1991 and 1996, the level of diversification remained virtually unchanged, with a slight decrease in variability.

Figure 31 - In the 48 rural CCSs whose populations had grown to more than 10,000 by 1996, the level of diversification was stable between 1991 and 1996



Of the 48 CCSs with populations greater than 10,000 in 1996, 29 (60%) diversified their economies and 19 (40%) became more specialized (Table 19). The communities grew on average by 4,156 residents. Almost half (14) of the diversifying CCSs are located in Ontario. Forty-eight percent (14) of the CCSs are found in census divisions designated as rural, which includes 31% in metropolitan adjacent regions, 14% in non-metropolitan adjacent regions, and 3% in the northern hinterlands. Ten (35%) were located within a predominantly urban census division.

Six of the specializing CCSs were in Quebec and four in both Ontario and British Columbia. Almost 57% (10) were located in rural census divisions, which included 42% in metropolitan adjacent areas, and 5% in both non-metropolitan adjacent areas and northern hinterlands. Six (32%) were located within predominantly urban census divisions.

Table 19 - Geographic location of rural CCSs with populations >10,000 in 1996						
1. Diversifying CCSs – 1981 to 1996						
	Number	**1***	**2***	**3***	**4***	**5***
Nova Scotia	1	0	0	0	1	0
Quebec	7	2	0	0	0	5
Ontario	14	3	3	0	4	4
Manitoba	1	1	0	0	0	0
Alberta	4	3	1	0	0	0
British Columbia	1	0	0	0	0	1
Northwest Territories	1	0	0	1	0	0
Total diversifying	29	9	4	1	5	10
Percent diversifying		31.0	13.8	3.4	17.2	34.5
2. Specializing CCSs – 1981 to 1996						
Newfoundland	1	0	0	1	0	0
Quebec	6	2	0	0	1	3
Ontario	4	1	0	0	2	1
Manitoba	1	1	0	0	0	0
Alberta	3	2	1	0	0	0
British Columbia	4	2	0	0	0	2
Total specializing	19	8	1	1	3	6
Percent specializing		42.1	5.3	5.3	15.8	31.6
TOTAL	48	17	5	2	8	16
Percent of TOTAL		35.4	10.4	4.2	16.7	33.3
*OECD codes - 1- rural, metro adjacent, 2 - rural, non-metro adjacent, 3 - rural, northern regions, 4 – intermediate, 5 – predominantly urban						
Source: Statistics Canada, Census of Population, 1981 and 1996						

The next section summarizes the results of our study and gives brief concluding remarks.

6.0 Summary and conclusions

This research project provides an overview of diversification and specialization in rural regions (census divisions) and communities (census consolidated sub-divisions) for the census years 1981, 1986, 1991 and 1996.[15] Diversified communities tend to be more resilient to economic shocks and more likely to achieve greater growth in population. Diversification and specialization are measured using a modified Herfindahl Index. A

[15] Subsequent research with this data set could include: broadening the analysis at the census division level, analysis of the communities in the HI range of 0.2 to 0.4, examining frequency distributions, regression analysis of factors associated with diversification (providing data on expansions, births and deaths of firms are available), comparative analysis between provinces, especially between Quebec and Ontario, cluster analysis to find CCSs that are similar, expansion of the section on services, checking for manufacturing dominance, and addition of the 2001 Census of Population data.

negative change in the HI indicates a shift to a more diversified industrial structure and a positive change reflects more specialization. The HI shows shifts in employment among 18 industrial sectors, thus reflecting shifts in employment from primary industry to manufacturing or other sectors.

A wide range of diversification was found in the census divisions, but this range remained stable from 1981 to 1996. Within each census division (CD), there was also a wide range in the diversification of the census consolidated sub-divisions (CCSs).

The range and variability of diversification in rural census consolidated sub-divisions tends to be greater than that of larger centres. However, if a community is considered diversified if its Herfindahl Index lies between 0.1 and 0.19, then about 70% of rural census consolidated sub-divisions are diversified. The number of diversified rural communities increased by 11% between 1986 and 1996. A high degree of variability was found among the provinces. However, Manitoba, Saskatchewan and Alberta had the highest share of the "least diversified" CCSs, and the greatest growth in the number of diversified rural communities was found in these three provinces. Overall, about 41% of rural CCSs experienced labour force growth, while their industrial make-up became more diversified, and 23% experienced growth while specializing. The labour force contracted in the remaining 36% of CCSs. The size of the rural labour force decreased in Newfoundland, Manitoba and Saskatchewan, and increased in the other provinces.

The size of the labour force increased in more than half of the agriculture-dominated rural CCSs (employment in agriculture 20% or more) between 1986 and 1996. Of these, 39% became more diversified, and 13% more specialized. The labour force in the agriculture-dominated CCSs decreased in Manitoba and Saskatchewan. Thirty-eight percent of the fishing dominated CCSs experienced labour force growth while becoming more diversified, and 15% grew while specializing. In the logging and forestry-dominated CCSs, there was labour force expansion and diversification in 26% and labour force expansion and specialization in 18% of CCSs. Finally, in the mining-dominated CCSs, 41% had labour force growth while diversifying, and 18% had growth while specializing.

In order to grow, each community must go beyond dependence on the area immediately around it – it must develop a life of its own. Otherwise, its potential is limited. Each community must find its own niche within the global economy. A typical small community is a microcosm of a larger centre. Employment is distributed between some primary industry, manufacturing, services, distribution and construction. For the small communities that are already diversified, the goal must be to specialize in some new product or products to kick-start the economy. For those that are highly specialized, industrial diversification may be the answer.

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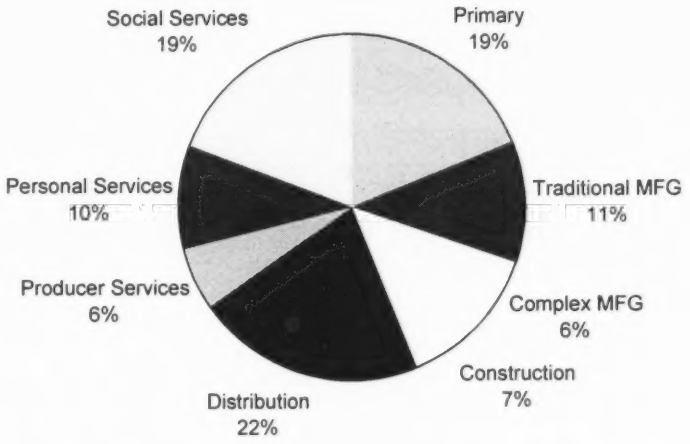
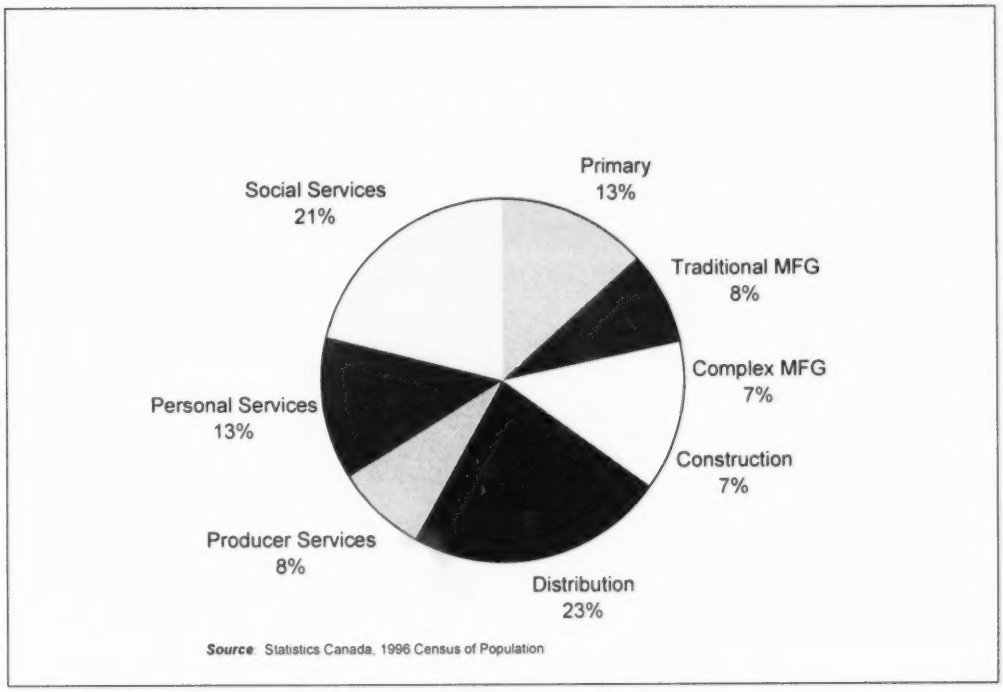
Appendices

Appendix A – Distribution of rural labour force – 1981



Source: Statistics Canada, 1981 Census of Population

Appendix B – Distribution of rural labour force - 1996



Source: Statistics Canada, 1996 Census of Population

Appendix C – Range of Diversification / Specialization in CCSs – 1981							
	Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0	133	80	21	12	11	257
500 to 2,499	4	778	249	98	51	31	1211
2,500 to 4,999	0	321	80	10	1	3	415
5,000 to 9,999	0	210	49	4	2	0	265
10,000 to 49,999	0	244	38	3	2	0	287
50,000 to 99,999	0	31	11	1	0	0	43
>100,000	0	28	6	0	0	0	34
Total	4	1745	513	137	68	45	2512
	Percent Distribution of CCSs by population size						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0.0	51.8	31.1	8.2	4.7	4.3	100.0
500 to 2,499	0.3	64.2	20.6	8.1	4.2	2.6	100.0
2,500 to 4,999	0.0	77.3	19.3	2.4	0.2	0.7	100.0
5,000 to 9,999	0.0	79.2	18.5	1.5	0.8	0.0	100.0
10,000 to 49,999	0.0	85.0	13.2	1.0	0.7	0.0	100.0
50,000 to 99,999	0.0	72.1	25.6	2.3	0.0	0.0	100.0
>100,000	0.0	82.4	17.6	0.0	0.0	0.0	100.0
Percent of total	0.2	69.5	20.4	5.5	2.7	1.8	100.0
	Percent Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0.0	7.6	15.6	15.3	17.6	24.4	12.0
500 to 2,499	100.0	44.6	48.5	71.5	75.0	68.9	45.2
2,500 to 4,999	0.0	18.4	15.6	7.3	1.5	6.7	15.9
5,000 to 9,999	0.0	12.0	9.6	2.9	2.9	0.0	10.5
10,000 to 49,999	0.0	14.0	7.4	2.2	2.9	0.0	12.2
50,000 to 99,999	0.0	1.8	2.1	0.7	0.0	0.0	2.2
>100,000	0.0	1.6	1.2	0.0	0.0	0.0	2.0
Percent of total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, 1981 Census of Population							

Appendix D – Range of Diversification / Specialization in CCSs – 1986							
	Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0	129	90	24	15	12	270
500 to 2,499	0	736	285	114	37	30	1,202
2,500 to 4,999	0	304	90	12	1	3	410
5,000 to 9,999	0	198	56	5	0	0	259
10,000 to 49,999	0	213	73	2	2	0	290
50,000 to 99,999	0	26	18	0	0	0	44
>100,000	0	25	12	0	0	0	37
Total	0	1631	624	157	55	45	2,512
	Percent Distribution of CCSs by population size						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0.0	47.8	33.3	8.9	5.6	4.4	100.0
500 to 2,499	0.0	61.2	23.7	9.5	3.1	2.5	100.0
2,500 to 4,999	0.0	74.1	22.0	2.9	0.2	0.7	100.0
5,000 to 9,999	0.0	76.4	21.6	1.9	0.0	0.0	100.0
10,000 to 49,999	0.0	73.4	25.2	0.7	0.7	0.0	100.0
50,000 to 99,999	0.0	59.1	40.9	0.0	0.0	0.0	100.0
>100,000	0.0	67.6	32.4	0.0	0.0	0.0	100.0
Percent of total	0.0	64.9	24.9	6.3	2.2	1.8	100.0
	Percent Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0.0	7.9	14.4	15.3	27.3	26.7	12.0
500 to 2,499	0.0	45.1	45.7	72.6	67.3	66.7	45.2
2,500 to 4,999	0.0	18.6	14.4	7.6	1.8	6.7	15.9
5,000 to 9,999	0.0	12.1	9.0	3.2	0.0	0.0	10.5
10,000 to 49,999	0.0	13.1	11.7	1.3	3.6	0.0	12.2
50,000 to 99,999	0.0	1.6	2.9	0.0	0.0	0.0	2.2
>100,000	0.0	1.5	1.9	0.0	0.0	0.0	2.0
Percent of total	0.0	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, 1986 Census of Population							

Appendix E – Range of Diversification / Specialization in CCSs – 1991							
	Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	6	142	68	20	21	25	282
500 to 2,499	19	792	236	87	34	7	1,175
2,500 to 4,999	2	327	58	9	3	1	400
5,000 to 9,999	0	220	34	3	1	0	258
10,000 to 49,999	0	255	46	2	3	0	306
50,000 to 99,999	0	41	8	0	0	0	49
>100,000	0	32	10	0	0	0	42
Total	27	1,809	460	121	62	33	2,512
	Percent Distribution of CCSs by population size						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	2.1	50.4	24.1	7.1	7.4	8.9	100.0
500 to 2,499	1.6	67.4	20.1	7.4	2.9	0.6	100.0
2,500 to 4,999	0.5	81.8	14.5	2.3	0.8	0.3	100.0
5,000 to 9,999	0.0	85.3	13.2	1.2	0.4	0.0	100.0
10,000 to 49,999	0.0	83.3	15.0	0.7	1.0	0.0	100.0
50,000 to 99,999	0.0	83.7	16.3	0.0	0.0	0.0	100.0
>100,000	0.0	76.2	23.8	0.0	0.0	0.0	100.0
Percent of total	1.1	72.0	18.3	4.8	2.5	1.3	100.0
	Percent Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	22.2	7.9	14.8	16.5	33.9	75.8	12.0
500 to 2,499	70.4	43.8	51.3	71.9	54.8	21.2	45.2
2,500 to 4,999	7.4	18.1	12.6	7.4	4.8	3.0	15.9
5,000 to 9,999	0.0	12.2	7.4	2.5	1.6	0.0	10.5
10,000 to 49,999	0.0	14.1	10.0	1.7	4.8	0.0	12.2
50,000 to 99,999	0.0	2.3	1.7	0.0	0.0	0.0	2.2
>100,000	0.0	1.8	2.2	0.0	0.0	0.0	2.0
Percent of total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, 1991 Census of Population							

Appendix F – Range of Diversification / Specialization in CCSs – 1996							
	Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0	126	89	43	18	24	300
500 to 2,499	2	800	249	64	16	7	1,138
2,500 to 4,999	0	335	58	4	2	1	400
5,000 to 9,999	0	218	41	3	1	0	263
10,000 to 49,999	0	260	42	3	2	0	307
50,000 to 99,999	0	48	7	0	0	0	55
>100,000	0	36	13	0	0	0	49
Total	2	1,823	499	117	39	32	2,512
	Percent Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0.0	42.0	29.7	14.3	6.0	8.0	100.0
500 to 2,499	0.2	70.3	21.9	5.6	1.4	0.6	100.0
2,500 to 4,999	0.0	83.8	14.5	1.0	0.5	0.3	100.0
5,000 to 9,999	0.0	82.9	15.6	1.1	0.4	0.0	100.0
10,000 to 49,999	0.0	84.7	13.7	1.0	0.7	0.0	100.0
50,000 to 99,999	0.0	87.3	12.7	0.0	0.0	0.0	100.0
>100,000	0.0	73.5	26.5	0.0	0.0	0.0	100.0
Percent of total	0.1	72.7	19.9	4.7	1.6	1.3	100.0
	Percent Distribution of CCSs by Herfindahl Index						
Population Size	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
< 500	0.0	6.9	17.8	36.8	46.2	75.0	12.0
500 to 2,499	100.0	43.9	49.9	54.7	41.0	21.9	45.2
2,500 to 4,999	0.0	18.4	11.6	3.4	5.1	3.1	15.9
5,000 to 9,999	0.0	12.0	8.2	2.6	2.6	0.0	10.5
10,000 to 49,999	0.0	14.3	8.4	2.6	5.1	0.0	12.2
50,000 to 99,999	0.0	2.6	1.4	0.0	0.0	0.0	2.2
>100,000	0.0	2.0	2.6	0.0	0.0	0.0	2.0
Percent of total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, 1996 Census of Population							

Appendix G – Range of Diversification / Specialization in CCSs by OECD code – 1981							
	Number of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0	117	19	1	0	0	137
Intermediate	0	361	51	21	4	2	439
Predominantly Rural	4	1,267	443	115	64	43	1,936
Rural, metro adjacent	2	536	128	33	25	21	745
Rural, non-metro-adjacent	2	695	295	76	39	21	1,128
Northern	0	36	20	6	0	1	63
Total	4	1,745	513	137	68	45	2,512
	Percent of CCSs by OECD code						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	85.4	13.9	0.7	0.0	0.0	100.0
Intermediate	0.0	82.2	11.6	4.8	0.9	0.5	100.0
Predominantly Rural	0.2	65.4	22.9	5.9	3.3	2.2	100.0
Rural, metro adjacent	0.3	71.9	17.2	4.4	3.4	2.8	100.0
Rural, non-metro-adjacent	0.2	61.6	26.2	6.7	3.5	1.9	100.0
Northern	0.0	57.1	31.7	9.5	0.0	1.6	100.0
Total	0.2	69.5	20.4	5.5	2.7	1.8	100.0
	Percent of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	6.7	3.7	0.7	0.0	0.0	5.5
Intermediate	0.0	20.7	9.9	15.3	5.9	4.4	17.5
Predominantly Rural	100.0	72.6	86.4	83.9	94.1	95.6	77.1
Rural, metro adjacent	50.0	30.7	25.0	24.1	36.8	46.7	29.7
Rural, non-metro-adjacent	50.0	39.8	57.5	55.5	57.4	46.7	44.9
Northern	0.0	2.1	3.9	4.4	0.0	2.2	2.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, Census of Population, 1981							

Appendix H - Range of Diversification / Specialization in CCSs by OECD code - 1986							
	Number of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0	104	31	2	0	0	137
Intermediate	0	302	110	23	1	3	439
Predominantly Rural	0	1,225	483	132	54	42	1,936
Rural, metro adjacent	0	508	158	40	17	22	745
Rural, non-metro-adjacent	0	676	310	86	36	20	1,128
Northern	0	41	15	6	1	0	63
Total	0	1,631	624	157	55	45	2,512
	Percent of CCSs by OECD code						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	75.9	22.6	1.5	0.0	0.0	100.0
Intermediate	0.0	68.8	25.1	5.2	0.2	0.7	100.0
Predominantly Rural	0.0	63.3	24.9	6.8	2.8	2.2	100.0
Rural, metro adjacent	0.0	68.2	21.2	5.4	2.3	3.0	100.0
Rural, non-metro-adjacent	0.0	59.9	27.5	7.6	3.2	1.8	100.0
Northern	0.0	65.1	23.8	9.5	1.6	0.0	100.0
Total	0.0	64.9	24.8	6.3	2.2	1.8	100.0
	Percent of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	6.4	5.0	1.3	0.0	0.0	5.5
Intermediate	0.0	18.5	17.6	14.6	1.8	6.7	17.5
Predominantly Rural	0.0	75.1	77.4	84.1	98.2	93.3	77.1
Rural, metro adjacent	0.0	31.1	25.3	25.5	30.9	48.9	29.7
Rural, non-metro-adjacent	0.0	41.4	49.7	54.8	65.5	44.4	44.9
Northern	0.0	2.5	2.4	3.8	1.8	0.0	2.5
Total	0.0	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, Census of Population, 1986							

Appendix I - Range of Diversification / Specialization in CCSs by OECD code - 1991							
	Number of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0	117	20	0	0	0	137
Intermediate	3	358	60	13	5	0	439
Predominantly Rural	24	1,334	380	108	58	32	1,936
Rural, metro adjacent	11	549	110	40	20	15	745
Rural, non-metro-adjacent	13	743	257	63	35	17	1,128
Northern	0	42	13	5	3	0	63
Total	27	1,809	460	121	63	32	2,512
	Percent of CCSs by OECD code						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	85.4	14.6	0.0	0.0	0.0	100.0
Intermediate	0.7	81.5	13.7	3.0	1.1	0.0	100.0
Predominantly Rural	1.2	68.9	19.6	5.6	3.0	1.7	100.0
Rural, metro adjacent	1.5	73.7	14.8	5.4	2.7	2.0	100.0
Rural, non-metro-adjacent	1.2	65.9	22.8	5.6	3.1	1.5	100.0
Northern	0.0	66.7	20.6	7.9	4.8	0.0	100.0
Total	1.1	72.0	18.3	4.8	2.5	1.3	100.0
	Percent of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	6.5	4.3	0.0	0.0	0.0	5.5
Intermediate	11.0	19.8	13.0	10.7	7.9	0.0	17.5
Predominantly Rural	89.0	73.7	82.6	89.3	92.1	100.0	77.1
Rural, metro adjacent	41.0	30.3	23.9	33.1	31.7	0.0	29.7
Rural, non-metro-adjacent	48.0	41.1	55.9	52.1	55.6	0.0	44.9
Northern	0.0	2.3	2.8	4.1	4.8	0.0	2.5
Total	100	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, 1991 Census of Population							

Appendix J - Range of Diversification / Specialization in CCSs by OECD code - 1996							
	Number of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0	117	20	0	0	0	137
Intermediate	0	359	66	8	5	1	439
Predominantly Rural	2	1,347	413	109	34	31	1,936
Rural, metro adjacent	1	566	110	37	15	16	745
Rural, non-metro-adjacent	1	743	284	68	17	15	1,128
Northern	0	38	19	4	2	0	63
Total	2	1,823	499	117	39	32	2,512
	Percent of CCSs by OECD code						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	85.4	14.6	0.0	0.0	0.0	100.0
Intermediate	0.0	81.8	15.0	1.8	1.1	0.2	100.0
Predominantly Rural	0.1	69.6	21.3	5.6	1.8	1.6	100.0
Rural, metro adjacent	0.1	76.0	14.8	5.0	2.0	2.1	100.0
Rural, non-metro-adjacent	0.1	65.9	25.2	6.0	1.5	1.3	100.0
Northern	0.0	60.3	30.2	6.3	3.2	0.0	100.0
Total	0.1	72.6	19.9	4.7	1.6	1.3	100.0
	Percent of CCSs by Herfindahl Index						
OECD code	**< 0.1**	**0.1 to 0.19**	**0.2 to 0.29**	**0.3 to 0.39**	**0.4 to 0.49**	**> 0.5**	**Total**
Predominantly Urban	0.0	6.4	4.0	0.0	0.0	0.0	5.5
Intermediate	0.0	19.7	13.2	6.8	12.8	3.1	17.5
Predominantly Rural	100	73.9	82.8	93.2	87.2	96.9	77.1
Rural, metro adjacent	50	31.0	22.0	31.6	38.5	50.0	29.7
Rural, non-metro-adjacent	50	40.8	56.9	58.1	43.6	46.9	44.9
Northern	0.0	2.1	3.8	3.4	5.1	0.0	2.5
Total	100	100.0	100.0	100.0	100.0	100.0	100.0
Source: Statistics Canada, 1996 Census of Population							

Appendix K – Total rural* labour force in agriculture										
	1981	%	1986	%	1991	%	1996	%	% Change 1981-96	% Change 1986-96
CANADA	293,445	100	304,155	100.0	296,200	100.0	264,260	100.0	-9.9	-13.1
Newfoundland & Labrador	760	0.3	790	0.3	1,160	0.4	1,225	0.5	61.2	55.1
Prince Edward Island	5,090	1.7	5,085	1.7	4,635	1.6	4,330	1.6	-14.9	-14.8
Nova Scotia	2,475	0.8	2,555	0.8	2,520	0.9	2,470	0.9	-0.2	-3.3
New Brunswick	6,085	2.1	6,755	2.2	6,075	2.1	6,340	2.4	4.2	-6.1
Quebec	62,060	21.1	63,780	21.0	63,860	21.6	56,990	21.6	-8.2	-10.6
Ontario	71,660	24.4	69,180	22.7	67,010	22.6	62,310	23.6	-13.0	-9.9
Manitoba	34,720	11.8	37,355	12.3	35,770	12.1	30,405	11.5	-12.4	-18.6
Saskatchewan	79,120	27.0	83,885	27.6	80,860	27.3	67,605	25.6	-14.6	-19.4
Alberta	27,955	9.5	30,715	10.1	30,310	10.2	28,235	10.7	1.0	-8.1
British Columbia	3,520	1.2	4,055	1.3	4,000	1.4	4,350	1.6	23.6	7.3
Northwest Territories	15	0.0	15	0.0	15	0.0	10	0.0	-33.3	-33.3

*Rural – CCSs with populations less than 10,000 in 1981
Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

Appendix L – Total rural* labour force in fishing and trapping										
	1981	%	1986	%	1991	%	1996	%	% Change 1981-96	% Change 1986-96
CANADA	21.340	100.0	26.535	100.0	26.270	100.0	24.575	100.0	15.2	-7.4
Newfoundland & Labrador	9,125	42.8	10,680	40.2	9,990	38.0	8.095	32.9	-11.3	-24.2
Prince Edward Island	2,690	12.6	3,500	13.2	3,470	13.2	3,755	15.3	39.6	7.3
Nova Scotia	4,140	19.4	5,285	19.9	5,270	20.1	5,325	21.7	28.6	0.8
New Brunswick	2.130	10.0	2.990	11.3	3,045	11.6	3,475	14.1	63.1	16.2
Quebec	1,435	6.7	1,855	7.0	1,900	7.2	1,510	6.1	5.2	-18.6
Ontario	325	1.5	540	2.0	360	1.4	510	2.1	56.9	-5.6
Manitoba	360	1.7	330	1.2	380	1.4	415	1.7	15.3	25.8
Saskatchewan	85	0.4	60	0.2	10	0.0	35	0.1	-58.8	-41.7
Alberta	10	0.0	25	0.1	20	0.1	30	0.1	200.0	20.0
British Columbia	905	4.2	1,145	4.3	1,590	6.1	1,240	5.0	37.0	8.3
Northwest Territories	135	0.6	125	0.5	235	0.9	185	0.8	37.0	48.0
*Rural - CCSs with < 10,000 inhabitants - 1981										
Source: Statistics Canada. Census of Population - 1981, 1986, 1991, 1996										

Appendix M – Total rural* labour force in logging and forestry										
	1981	%	1986	%	1991	%	1996	%	% Change 1981 to 1996	% Change 1986 to 1996
CANADA	38,520	100.0	37,655	100.0	31,905	100.0	31,570	100.0	-18.0	-16.2
Newfoundland & Labrador	2,535	6.6	2,790	7.4	2,435	7.6	2,045	6.5	-19.3	-26.7
Prince Edward Island	95	0.2	155	0.4	120	0.4	220	0.7	131.6	41.9
Nova Scotia	1,625	4.2	2,090	5.6	1,550	4.9	1,575	5.0	-3.1	-24.6
New Brunswick	5,970	15.5	6,065	16.1	4,740	14.9	4,290	13.6	-28.1	-29.3
Quebec	17,890	46.4	15,980	42.4	13,715	43.0	13,665	43.3	-23.6	-14.5
Ontario	2,445	6.3	3,005	8.0	2,155	6.8	2,485	7.9	1.6	-17.3
Manitoba	395	1.0	385	1.0	355	1.1	275	0.9	-30.4	-28.6
Saskatchewan	655	1.7	735	2.0	565	1.8	1,020	3.2	55.7	38.8
Alberta	405	1.1	345	0.9	690	2.2	740	2.3	82.7	114.5
British Columbia	6,505	16.9	6,105	16.2	5,580	17.5	5,255	16.6	-19.2	-13.9
Northwest Territories	5				20	0.1	15		200.0	

*CCSs with < 10,000 inhabitants in 1981

Source: Statistics Canada, Census of Population - 1981, 1986, 1991, 1996

Appendix N – Total rural* labour force in mining										
	1981	%	1986	%	1991	%	1996	%	% Change 1981-96	% Change 1986-96
CANADA	37,640	100.0	29,930	100.0	29,675	100.0	26,420	100.0	-29.8	-11.7
Newfoundland & Labrador	2,165	5.8	950	3.2	1,115	3.8	1,020	3.9	-52.9	7.4
Prince Edward Island	75	0.2	80	0.3	135	0.5	95	0.4	26.7	18.8
Nova Scotia	760	2.0	710	2.4	660	2.2	560	2.1	-26.3	-21.1
New Brunswick	1,605	4.3	2,005	6.7	2,425	8.2	1,940	7.3	20.9	-3.2
Quebec	14,430	38.3	9,935	33.2	10,150	34.2	8,835	33.4	-38.8	-11.1
Ontario	5,515	14.7	4,520	15.1	4,270	14.4	3,580	13.6	-35.1	-20.8
Manitoba	2,025	5.4	1,405	4.7	1,405	4.7	1,380	5.2	-31.9	-1.8
Saskatchewan	4,975	13.2	4,690	15.7	4,325	14.6	3,925	14.9	-21.1	-16.3
Alberta	3,140	8.3	3,595	12.0	3,350	11.3	3,710	14.0	18.2	3.2
British Columbia	2,530	6.7	1,350	4.5	1,485	5.0	885	3.3	-65.0	-34.4
Northwest Territories	420	1.1	690	2.3	355	1.2	490	1.9	16.7	-29.0

*CCSs with < 10,000 inhabitants in 1981

Source: Statistics Canada. Census of Population - 1981, 1986, 1991, 1996

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